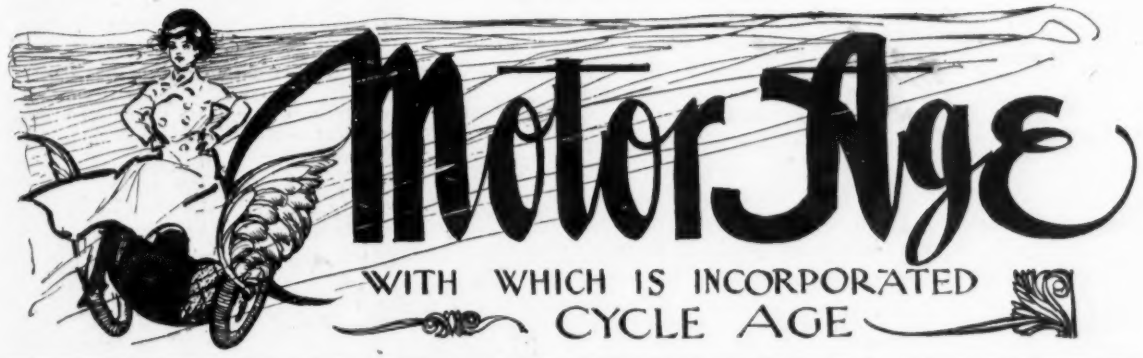
Motor Age

Vol. II. No. 2 JULY 10, 1902 5 Cents



VOL. II. NO. 2. CHICAGO, JULY 10, 1902. $2.00 PER YEAR

FIRST DAY OF PARIS-VIENNA

Leaders Cover Part of Journey at 77 Miles an Hour—Fournier's Bad Luck—Darracq Makes Fine Showing

Paris, June 27.—(Special correspondence.)—The first day's racing in the Paris-Vienna is over. The day has been remarkable for the wonderful success of the Panhard and the ill-fortune of the Mors. The day's run was to Belfort, about 253 miles. The first six arrivals were Panhards, the operators being as follows: De Knyff, Henry Farman, Jarrott, Maurice Farman, Teste and Pinson. The eighth arrival was also a Panhard, driven by deCrawhez. The seventh arrival was a Mercedes, operated by Zborowsky. Each of the first six men covered the distance in less than 5 hours, DeKnyff's time being 4:16:30 2-5.

The troubles of the Mors commenced about 7 miles from the start when Rolls ran into and demolished a tree and so injured his machine that he could not continue. Fraignac butted a railroad barrier and Keene followed suit, both machines being placed hors de combat. Fournier, who secured pride of place and was the first starter, was in the lead, about 5 minutes ahead of DeKnyff, until he arrived at Troyes, 97 miles from the start. There he ran over a huge nail, or a piece of sharp iron which had the appearance of having been prepared for the occasion and lacerated one of his tires. By the time he had made a repair the other competitors were so far ahead that he considered it useless to continue and so abandoned the contest. Baron deCaters, on a Mors, arrived tenth and Vanderbilt on a machine of the same make, in twenty-fifth position. Edge, on his Napier, was eleventh.

In the light vehicle class the Darracq finished first, fourth, fifth, sixth, eighth and tenth. A Gorbron-Brillie was second and Louis Renault, on a machine of his own make, third.

In the voiturette class Oury, on a Renault, was first and another Renault was third. The second machine was a Darracq, ridden by Guillaume, Bardeau, Osmont, Lazon, Bardin and Hallex, all on De Dions, finished in the order named in the motor tricycle class and among the motor bicyclists a Werner, ridden by Bucquet, was first, Posdenick, on a Laurien-Klement, made in Austria, second and another Werner third.

The actual times made by the thirty-five machines which made the best records for the day, were as follows:

	Hour.	*Min.*	*Sec.*
DeKnyff, Panhard	4	16	30 2-5
H. Farman, Panhard	4	18	1 3-5
Jarrott, Panhard	4	26	9 3-5
M. Farman, Panhard	4	28	45
Teste, Panhard	4	45	48 2-5
Edmond, Darracq	4	46	58
Pinson, Panhard	4	50	2
Rigolly, Gobron-Brillie	4	53	4 2-5
L. Renault, Renault	5	1	49 2-5
Zborowsky, Mercedes	5	1	50 2-5
Baras, Darracq	5	3	24 4-5
DeCrawhez, Panhard	5	4	14
Hemery, Darracq	5	10	25
Giraud, C. G. V.	5	10	25 3-5
Max, Darracq	5	16	12 1-5
Baerteaux, Panhard	5	21	49 2-5
Marcellin, Darracq	5	29	57
M. Renault, Renault	5	31	5 2-5
Collin, Darracq	5	47	13 1-5
Thery, Decauville	5	48	55 2-5
Salleron, Richard	5	53	35 3-5
Wherle, Darracq	5	55	13 4-5
DeCaters, Mors	6	3	18
Edge, Napier	6	3	28 4-5
Chanliaud, Serpollet	6	9	14 4-5
Forest, Mercedes	6	9	18 3-5
Dernier, Gobron-Brillie	6	12	44 3-5
Leys, Panhard	6	13	36 3-5
Bellamy, Mercedes	6	14	28
Bardeau, DeDion-Bouton tricycle	6	17	2
A. Fournier, Gobron-Brillie	6	17	10 2-5
Oury, Renault	6	19	44 2-5
Guilliaume, Darracq	6	23	25 1-5
Chauchard, Mercedes	6	26	9
Barbaroux, Clement	6	26	35 3-5

Bauge and Lamberjack, celebrated motor cyclists, stationed themselves on a favorable road, about 20 miles outside of Paris, and took up positions an eighth of a mile apart to time some of the faster men and ascertain the rate of speed at which they were traveling. The first man of note to come along was Fournier who covered the distance at the rate of a mile in 48 seconds. DeKnyff and H. Farman did even better, each covering the stretch in 5 4-5 seconds, or at the rate of a mile in 46 3-5 seconds. The next best was Edge, traveling at 51 seconds to the mile. DeKnyff and Farman were therefore traveling over this particular stretch of road at a speed of over 77 miles an hour.

CHICAGO CLUB'S TEST POSTPONED

Weather of the Last Month Turns Road Into Quagmires—New Date August 2

The Chicago club's 100-mile endurance run will not take place Saturday of this week, as had been planned. For the last month northern Illinois has been simply deluged. The country is flooded in many places and the roads, none too good at the best of times, are now a menace to the safety of an automobilist who attempts to cover them at anywhere near the legal limit of speed. On Sunday members of the club covered a portion of the course. The roads, dried hard after the deluge, were considered too rough to make a fair test possible. The directors of the club met on Monday and after considering the matter from all sides adopted this resolution:

Resolved, That, on account of the extraordinary weather of the last month, it would be unfair to expect machines to make 100-mile test, under the conditions imposed by the rules, and that the event be postponed until Saturday, August 2, and date of receipt of entries be extended to Monday, July 28.

Gentlemen who have made entries will be privileged to withdraw them if unable to take part in the test on the day named. The change, however, will result in a much larger entry and seems to have met with the approval of everyone concerned.

Percy Pierce, of Buffalo, appeared in Chicago Wednesday morning, ready for the run. He will probably go west in the interval between this time and August 2.

The Northern Mfg. Co., of Detroit, telephoned an entry Tuesday and on being notified of the postponement promised two more. The Haynes-Apperson company decided on Tuesday to make three entries.

WHERE CLUB RUNS PLEASE

'Frisco and San Jose Club Hold Rendezvous Event With Marked Success

San Francisco, Cal., June 30.—The automobile clubs of this city and San Jose joined in a run to Mission San Jose yesterday. The 28-mile run was begun at 10 a. m. George F. Whitney, as captain of the run, set the pace, and the machines in a long line chugged for the destination. E. Courtney Ford and E. P. Brinegar acted as lieutenants. After stopping at Haywards the journey was continued, and with the loss of but two from the ranks all arrived safely at 12:30 p. m.

The San Jose contingent, captained by Frank Coypendall and with George Olenson as a lieutenant, began the journey at 10:30 a. m., and in 1 h. 14 m. arrived on the scene. After lunch the party went through the beautiful grounds, and with hardly an exception made no attempt to catch the 4 p. m. creek route boat back. On the return trip all of the autos were out for themselves and dust eating was over for that trip at least. While returning a milk team took exception to the yellow color of Dr. D. A. Stapler's surrey and distributed the milk along the road. All who took part voted the run a great success, all of which is largely due to the efforts of E. T. Sterling of San Jose and E. P. Brinegar of San Francisco, who arranged all the details.

PREPARED FOR GREAT RACING

Long Island Club Expects Unequaled Speed Demonstrations at Brighton Beach

The chairman of the press committee of the Long Island Club, A. R. Pardington, is already doing his duty nobly in the matter of the August race meet. "The Brighton Beach track," he writes, "is 80 feet wide and banked to a degree equaled by none. The bed is hard, and consequently is easily put and more easily kept in prime condition, than any in the metropolitan district. The fact that the track is to be used for a whole week's trotting meet, demonstrates its capabilities and desirabilities. For days before the event a 20-ton steam roller will be in almost constant use preparing the surface.

"The arrangements of the club contemplate the use of the grand stands, club house, paddock, etc. A complete machine shop in charge of experts will be established for use, on the day of the races, for the convenience of competitors and spectators who may go to the track by motor. Accommodations looking toward the most satisfactory care of cars are being made; these contemplate either checking or taking positions for observance of start and finish. The awards, either cash or plate, are at the option of the winner."

One of the Early Steam Cars

A correspondent has sent to the Motor Car Journal an extract from Bell's Life in London, now incorporated with Sporting Life, of June 7, 1840, as follows: "On Friday a steam-carriage, which had started from Deptford on the previous day, returned from Brighton to the Elephant and Castle, with passengers, having made its journey in three hours and a half. The route taken was through Cuckfield, Reigate, etc., and the trip gave general satisfaction to the passengers; but even the advocates of steam-carriages on common roads were rather shaken in their sanguine expectations that such a mode of traveling can be made generally available on common roads, the short and steep hills being a great detriment. The fare charged was only 5s. each person, and the novelty of course drew a full complement. This is the second trip of the sort which has been taken within a month, but they have been merely experimental, and much may yet be done to perfect the scheme."

Automobiles in the Public Service

GREEN LAKE, WIS.—The line of passenger automobiles will soon be running from Green Lake to Princeton, a distance of 9 miles, and from Green Lake to Ripon, about 7 miles. The line will run by the Tecumseh Ledge Mining and Motor Co.

SAN JUAN, PORTO RICO.—An automobile mail service between this city and Ponce was inaugurated on the first day of July.

CHILLOCOTHE, O.—Dennis McConnell is trying to interest local capitalists in an automobile line between this city

and Bainbridge. McConnell purposes to make both a passenger and freight transport.

TERRA HAUTE, IND.—It appears that the proposed automobile line will be an assured fact before many weeks have passed. At a recent meeting of those interested, the following members of the board of directors were elected: Barney Navin of Brazil; Ed Wallace of Clinton, and John Heenan of Linton. A committee composed of W. D. Van Horn and P. K. Reinbold is in Chicago looking over the various machines.

New Incorporations and Enterprises

NEW YORK.—Interstate Ball Bearing Co. Principal office, 243 Washington street, Jersey City, N. J.; objects, manufacture steel balls, automobiles, etc.; capital, $1,000,000.

SPRINGFIELD, O.—The prospects are favorable for the organization of a company here for the manufacture of the automobile invented by A. S. Krotz. Plans toward this end are being laid by leading men of this city. Mr. Krotz has made three automobiles in the past year, which are in successful operation. He uses one of them every day.

BUFFALO, N. Y.—D. C. McCan has leased the building at Nos. 58, 60 and 62 Broadway and will establish an automobile plant there.

NEW YORK.—The American Georges Richard Co. of New York, to manufacture automobiles. Capitol $10,500. Directors: Alexander Fischer, A. S. Merrill and N. N. Mason, of New York City.

TOWANDA, N. Y.—The Towanda Motor Vehicle Co. has been organized and capitalized at $25,000 to make electric motor vehicles in Towanda under patents and designs of Charles Lindstrom, of Buffalo.

NEWARK, N. J.—Articles incorporating the Auto-Vehicle Co. have been put on record in the county clerk's office. Its object is indicated in its title. The capital stock is $15,000, all of which is paid up by the incorporators. George Paddock, Belle M. Paddock and George T. Cole, of this city. The concern is already established in 79 Orange street.

WILMINGTON, DEL.—Machinery for the plant of the Diamond Automobile Co., at No. 821 Orange street, has arrived in this city, and is to be installed the ensuing week. The factory may be ready to begin operations in two weeks, and will be ready to repair machines in a few days. The company will manufacture an automobile and a power tricycle, to seat two persons. Gasoline will be the fuel, and the engines will transmit power by means of a new compensating friction gear recently patented by John H. Parsons. The directors of the new company are James Baily, C. B. Harris and John H. Parsons of this city; Charles Burton of Philadelphia; W. F. Pierce of St. Paul, Minn., and Martin Mainogue, of Springfield, Ohio.

GREELEY, COLO.—A company has been organized here, known as the Greeley Automobile Co., with E. M. Miller as president and general manager. The factory will be located in East Greeley.

HILLSDALE, MICH.—The Alamo Engine Co. has completed its first automobile. It will commence to manufacture them as soon as it can move into its new building. The company has done a very large amount of business since it came to this city less than a year ago, considering small quarters; its payroll last week was $1,100, an increase of more than $1,000 over its first week's payroll a year ago. The company expects to be in its new building before fall.

Notes of the Clubs and Sport

Joe Pennell, the American Anglomaniac artist, writes as follows to the English papers: "Havre, Wednesday, June 18. I have just finished a trip on 'Phœnix' motor bicycle of at least 2,000 miles—London to St. Remo, Pisa, Florence, here, as well as much riding around Florence. On return, absolutely alone, rode everything save part of Mt. Cenis. Longest day's run, over 300 miles. Troubles endless, but this evening machine all right."

A meeting was scheduled for Wednesday evening of this week to organize an automobile club at Kansas City. The people engaged in the business there have organized the Kansas City Automobile Dealers' Association, with D. F. Piazzek, president; J. W. Wittman, vice-president; W. L. de la Fontaine, secretary, and E. P. Moriarty, treasurer.

The Automobile Club of Great Britain will hold a 650 mile test, commencing September 1. The vehicles will start from the Crystal Palace each day, no two days' journey being over the same course. In connection with the event there will be speed trials at Bexhill.

The members of the Buffalo Automobile Club are said to contemplate leasing the Woman's building, used at the late Pan American Exposition, for a club house.

Motor Age

PUBLISHED EVERY THURSDAY BY SAMUEL A. MILES.

Principal Offices: 324 Dearborn Street, Chicago.
Eastern Offices: 150 Nassau Street, New York

TELEPHONE NUMBER, HARRISON 3544.

MOTOR AGE is entered at the Chicago Postoffice as second class matter.

TO ADVERTISERS: Copy for advertisements must reach the Chicago office not later than Tuesday morning to insure insertion the same week.

The circulation of Motor Age, guaranteed and proven each week, exceeds 5000 copies. For proof and advertising rates, see last page of reading matter.

Motor Age may be obtained, by any newsdealer, through the Western News Company, Chicago, or any of its branches, which are located in every large city in the United States.

The editor will be glad to receive communications for publication. They must be accompanied by the names and addresses of senders, which will not be used if request be made to that effect. Contributions will not be paid for unless accompanied by notice that payment is expected.

Subscription, Two Dollars a Year. - - Six Months, One Dollar

THE USE OF WATER IN GAS ENGINES.

Ever since the introduction of the internal combustion motor makers have striven to devise a method simpler than any yet used of so cooling the cylinder as to prevent undue expansion and make lubrication more simple and certain. Two methods are commonly used. On small motors, used on automobiles, it has been found possible to keep the cylinders reasonably cool by air alone. Attempts at air cooling with larger motors, even though mechanical devices have been tried to create a forced draft, have not yet been successful. The larger forms of motors are provided with water jackets through which water is circulated and cooled by radiating devices usually placed in the front of the vehicle. Progress during the last three or four years has been remarkable and has been almost entirely due to the efforts of automobile designers. But water cooling is by no means perfect and improvements will be received with satisfaction so long as the efficiency of the motor is not decreased and there is no increase in the cost of operation.

In this country and in England designers are known to be at work whose efforts are worth consideration. For some months past a Chicagoan, named Wallman, has been using a 50 horsepower engine without a water jacket, although the cooling is done by water in conjunction with air. In the operation of this engine the suction stroke, compression, combustion and exhaust occur exactly as in others, but are followed by the admission of a fine jet of water and a stream of compressed air. These meet at the point of entrance to the cylinder, coming from opposite directions. The force of contact forms a spray which passes into the cylinder and is distributed over its walls, there absorbing a great part of the heat generated by the last explosion. This absorption of heat of course generates steam under considerable pressure. Beyond this the operation of the engine is the same as in motors of the usual fore cycle type.

It is stated by the inventor, and his claims seem to be substantiated by long continued practice, that the temperature of the cylinder is kept well within the requirements and that lubrication is no more difficult than in the ordinary engine, beside which the trouble of connection with water jackets, circulating pumps, tanks, etc., all of which are a source of annoyance, is avoided.

From England comes a report of experiments made by Captain C. C. Longridge which, while following entirely different lines, were conducted with a view to the use of water in the cylinder, but with the double purpose of increasing power and absorbing and distributing heat. Captain Longridge holds that there is sufficient evidence to warrant attention to the subject. In an article published on Jan. 10, 1902, Engineering observed: "In theory, the consumption of spirits (an English description of what Americans know as to the highest grade of gasoline) for an equal power is 1.8 times the consumption of gasoline; in practice, however, the presence of water in the spirits increases the elasticity and efficiency of the power, and the proportion is only as 1.25 to 1. . . . It has been asserted, from results of tests carried out in Germany, that the efficiency of spirit motors is 23 per cent against 15 per cent for petroleum and 13 per cent for steam engines." In general terms, the advantages claimed for the addition of water are: Greater economy, greater elasticity, and smoother running. No very complete explanation of these better results has so far been published. The advantages of water have been described as a contribution of mechanical energy in the form of steam, as a cooling agent, obtaining increased charge volume and higher compression, as an absorber of the violence of explosions, etc. To these explanations the writer will now add one that he has lately discovered and has not yet seen offered. During the recent testing of a petrol motor, in which the wall, between the water jacket and the cylinder, developed porosity, admitting moisture to the combustion chamber, a sudden advance in ignition was observed, together with an increase of exhaust temperature, leading to burning of the valves. On information being given to the writer, he was somewhat perplexed to account for results apparently contrary to what might have been expected. Consideration, however, suggested to him the following explanation. Assuming the cylinder charge to be pentane, C^5H^{12}, the addition of water would lead to partial decomposition, carbon combining to carbon monoxide, hydrogen being liberated. In other words, water gas would be formed, and would account for the increase in exhaust temperature. The advance in ignition would be due to the greater inflammability of the gas, and may be illustrated thus: The molecular weight of pentane being 72,256 of oxygen would be required for its perfect combustion. On the other hand, the molecular weight of the water gas, $CO + H^4$, being 32, the oxygen needed for complete

combustion would be 48. One part by weight of pentane, therefore, would require 3.5 O, and one part of water gas only 1.5 O. This at once shows why the ignition is advanced, the greater inflammability of the water gas being due to the lesser amount of oxygen wanted for combustion. The probability that, under such circumstances, water gas is formed in the cylinder opens up a new side of the question that certainly deserves careful study.

EDISON MAKES A STATEMENT.

The North American Review, for July, has an article by Thomas A. Edison relative to his storage battery, which he says has passed successfully through four stages and is now undergoing the fifth. The first stage was the development of the battery, after 3 years of continuous experiment; the second was a series of tests extending over 18 months; the third was the construction of a manufacturing plant; the fourth was the manufacture of standard cells from the tools; the fifth is a test now being made with five different models of automobiles. They are of various weights and construction and each is being run 5,000 miles over country roads at an average distance of 100 miles a day. Edison figures that with an initial outlay of from $700 upward the electric vehicle will be within the reach of the man of moderate means. There is a vast difference between that statement and the foolhardy assumption of a writer recently quoted to the effect that $200 would cover the cost of the electric vehicle of the future. Incidentally, Edison calls attention to the fact that a great many unauthorized statements have been made, but does not specify them. It is now generally understood that as soon as the maker is satisfied that his batteries will render efficient service they will be on the open market, for sale to all makers of electric vehicles who agree with him that it is the best obtainable.

MACHINE OUTLASTS THE MAN.

An eastern gentleman, experienced in the promotion of contests, recently ventured the prediction that the Chicago 100-mile endurance run will be the last important event of its kind. His opinion coincides with that of MOTOR AGE, viz: that a 100-mile test is inadequate and teaches the makers and operators little or nothing. The distance must be greater and the conditions more arduous. The time is coming when, if contests are to continue, the machine will have outlasted the man and more than one operator will be necessary to give the machine the test it is capable of withstanding. Such may be the case in the proposed test from New York to Chicago. One man only has made the trip at anything like speed. He arrived in Chicago with one hand so badly numbed from vibration and exposure that it was practically useless for a week. In such a test as will be necessary to try the automobile of the future to its limit there will be more failures among men than machines.

EXTRAS IN THE TOOL BOX.

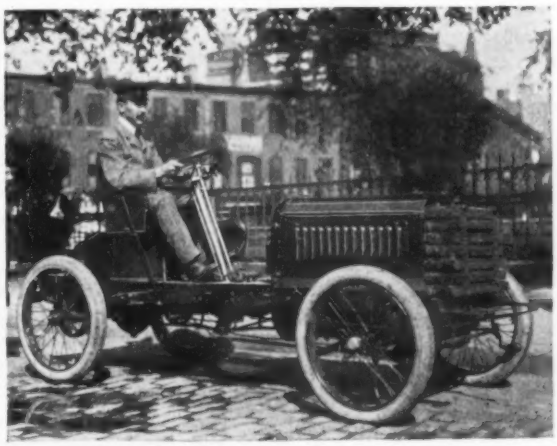
The acceptance of a little advice sometimes will save considerable trouble, although it may be considered valueless until experience proves its wisdom. It is well, then, to carry on an extended run extra valves and small parts liable to breakage and plenty of cylinder oil and gasoline, the former especially, because it is difficult to obtain in the country. Gasoline can be secured more easily, but on Sunday even that is sometimes out of reach.

If you use jump spark ignition take a few extra vibrators. Calculate for a moment the tremendous amount of service rendered by these small parts at lightning speed and the wisdom of the advice will be recognized. Look to the small nuts and bolts used to carry vital parts of the mechanism and lay in a stock. You will not regret the investment. Valve springs, tire tape, wire, with and without insulation, a few pieces of one-eighth and one-quarter inch brass pipe and some hose as well as a repair kit and pump for tires are useful. When you need them you will be twenty miles from home.

An illustration of the value of these hints occurred Sunday. A light vehicle of prominent make started without extra lubricating oil. But for the assistance rendered by a friend the day's journey would have been brought to an end on short notice.

The same two parties chanced to meet again thirty miles from Chicago, only to find the disciple of the wise virgin held up with a broken valve stem and no other in the supply box. The result was tow until good roads were reached and the disabled car was able to proceed under the power of one of its two cylinders.

The attention of the believer in all things ponderous and high powered in automobile construction is called to the fact that on the third day of the Paris-Vienna race a despised motor cycle was among the first six machines to finish. The case of one Charles Metz, who made the second best time at the Staten Island trials, should also be remembered. The day of the small machine is by no means done. It has yet to come, though there will be radical changes before the day arrives.



Charles B. Cooke in the Darracq That Won the Nice Race.

MOTOR BICYCLE RACE, BOSTON TO NEW YORK

No.	Contestant.	H.P.	Machine.	Points.	Medal.	Ribbon.
4	George M. Holley, Bradford, Pa.	2¼	Holley	1000	Gold	.....
5	G. M. Hendee, Springfield, Mass.	1¾	Indian	1000	Gold	.....
6	G. W. Sherman, Brooklyn	1¾	Indian	1000	Gold	.....
7	O. L. Pickard, San Francisco	1¾	Indian	1000	Gold	.....
17	N. P. Bernard, Hartford	2¼	Crescent	1000	Gold	.....
26	L. H. Roberts, Waltham	3	Orient	1000	Gold	.....
27	W. B. Jameson, Waltham	3	Orient	1000	Gold	.....
21	W. T. Marsh, Brockton	1¾	Marsh	994	Bronze	Blue
15	F. W. Tuttle, Hartford	2¼	Cleveland	959	Bronze	Blue
3	Emil Hafelfinger, New York	1½	Royal	944	Bronze	Red
22	Joe Downey, Brockton	1¾	Marsh	852	Bronze	.....
11	Henry Allmen, New York	2	Mitchell	558	Bronze	.....
29	C. Mankowski, New York	2	Mitchell	304	Bronze	.....

New York, July 7.—America's first motorcycle endurance run was satisfactorily completed by the arrival of the surviving contestants in this city during Saturday afternoon and evening.

The test was promoted by the Metropole Cycling Club, of this city, an organization of veterans, tradesmen, cycling writers on the daily papers and weekly cycling press and other enthusiasts interested in giving the bicycle and tricycle events the prominence and publicity due them in New York. The club had previously promoted successfully a coasting contest for bicycles that aroused much interest, and on the day of the endurance run's finish brought to a successful conclusion at Manhattan Beach the greatest all-around bicycle race meet in the history of the sport in the metropolitan district.

The run was in two stages. The first day's journey was from Boston to Hartford, 126 miles; and the second from Hartford to New York, 127 miles. The start was at 8 o'clock on the morning of the Fourth of July. The second day's test began at the same hour the following morning. Each day's run was divided into five approximately equi-distant controls.

The awards were on the basis of a maximum of 1,000 points, 100 to each control. Penalizations for replaced parts and late arrivals at controls were deducted from the maximum. Each replaceable part was sealed by the referee at the start and each replacement wrought a penalty of five points. An early and a late limit was set at each control, within which unpenalized arrivals could be made. Each minute of arrival behind the late limit entailed the loss of a point.

The machines were classified and limited in speed as follows: Class A up to 1½ horsepower, 8 miles per hour minimum to 15 miles per hour maximum; Class B, 1¾ to 2½ horsepower, 10 to 15; Class C, 2¼ to 3 horsepower, 12 to 15. Each contestant was furnished a time schedule on a celluloid-covered card, giving him his time schedule at each control. These were strapped to the arm and were in plain view of the rider all the way.

The entire credit of the whole scheme of the race, its rules and the complete and prompt gathering and compilation of the results is due to E. L. Ferguson. His effort was to secure a convincing demonstration of the practicability of the motor bicycle. His rules insured a common sense method of attaining it. His preparation of the details toward the receiving of accurate data of each control and his prompt compilation of the results within forty-eight hours of the finish were a lesson and a shining example to many-numbered committees engaged in tests in other lines more ambitious but no more replete with detail.

There were thirty-one starters in the run. Of these eighteen reached Hartford. One of them, Joseph I. Russell, was disqualified on his frank admission to Mr. Atkins, of the American Bicycle Co., whose Columbia motor bicycle he rode, that he had been towed into Hartford. Mr. Atkins at once reported the fact to the committee, who, of course, were forced to promptly disqualify Russell. Seventeen left Hartford for New York. Thirteen got through to the finish. Of these seven scored the maximum of 1,000 points and tied for the gold medal; two won bronze medals and Metropole blue ribbons, one gained a red ribbon and bronze medal and three secured bronze medals. The first four of the nineteen arrived at the finish together at 5:18 p. m., the earliest moment allowed by the schedule, and the last one of the thirteen reached the end of the journey at 9:05 p. m. The four leaders are said to have waited in Central Park for about a half an hour until their schedule permitted them going to the finish to be scored. Nine of the thirteen arrived ahead of the late time limit of the schedule and four behind it. The slowest arrival was but 2 hours and 35 minutes behind his schedule time.

The start was made from Copley Square, Boston, at 8 o'clock sharp. The men were sent away in pairs at one-minute intervals. There had been an all night rain, so that for the first 50 miles of the journey the rid-

ing was over slippery roads. After that the sun had dried them, but had baked the wagon wheel ruts into hard furrows. This made speeding dangerous and caused the downfall of several of the contestants.

The second day's going was even much harder. It had also rained all night in Connecticut and left the roads muddy. Added to this the riders passed through a series of heavy showers occurring at short intervals all the way from Stamford into town.

H. J. Wheret (Stratton) and C. A. Root, Jr., (Stratton), both of Brooklyn, quit about 5 miles from the start owing to accidents.

O. L. Pickard (Indian) reached Hartford first at 10:41 a. m., but waited to pass his control at 11:02, which was his schedule time. More riders arrived a few minutes later and contestants passed through town at intervals until 1:12 p. m.

Pickard reached Springfield in the lead at 2:52 p. m. and left on schedule for Hartford at 3:28. There were twenty survivors up to this point.

Emil Hafelfinger was the first to arrive at Hartford. He reached the end of the first day's journey at 5:10 p. m. He was followed in order by Holley, Hendee, Allman, Burnham, Pickard, Tuttle, O'Malley, Hennard, Russell, W. T. Marsh, Downey, Lane, Roberts, Jameson and Henshaw. It must be remembered, however, that the men were running on individual time schedules.

Holley got to New Haven first, at 10:41 a. m., followed by Pickard. Three miles before reaching New Haven Lane's machine (Marsh) was wrecked and he walked into town. Allman (Mitchell) also broke down through a collision with an obstruction in the road, but made repairs and continued. Morley reached Bridgeport first at 11:41 p. m.

In deference to popular superstition, no rider was allotted the hoo-doo "13." Racing men, by the way, pin the unlucky number on their backs upside down when they get it. One notable exception is furnished from the most superstitious of all racers. "Major" Taylor, the colored cycle crack, asks for "13" on every possible occasion. His registration number is "13" and he rides with "13" on his back.

C. Mankowski, of New York, found unridable roads and pluckily walked from Springfield to Hartford with his machine to score a point and qualify for the second day's relay. He reached Hartford at 1 o'clock Saturday morning and by his pluck was able to win a bronze medal at the finish of the test.

E. L. Ferguson ran into a tree near Warren, Mass., and was knocked senseless and out of the run. He calculates he lay nearly 40 minutes unconscious until he came to, alone.

W. F. Seaman traveled 81 miles with a broken crank on Saturday before he quit.

There were old fashioned "headers" a-plenty, reminding one of the high wheel days. George Hendee declared he had had fourteen of them. Charles Henshaw, (Auto-Bi), a cycle and motor cycle racing man, was late at Hartford owing to a series of headers.

R. G. Betts and Will R. Pitman, referee and associate referee, followed the riders from town to town by train.

At the finish the contestants handed over their machines to the committee for inspection for substituted parts.

Individual Records of the Riders

No. 1, Charles A. Persons, 2-horsepower Royal. First day, South Framingham, 23 miles; latest due 10:18 a. m., arrived 9:34 a. m. Worcester, 45 miles; latest due 11:44 a. m., arrived 11:35 a. m. Warren, 71 miles; latest due 1:36 p. m., arrived 1:41 p. m. Springfield, 100 miles; latest due, 4.23 p. m., arrived 5:38 p. m. Dropped out between here and Hartford.

No. 2, D. R. Rice, New York, 2-horsepower Royal, showed up but did not start.

No. 3, Emil Hafelfinger, New York, 1½-horsepower Royal, South Framingham, latest due 10:53, arrived 9:36. Worcester, latest due 12:18, arrived 11:08. Warren, latest due 2:16, arrived 1:14. Springfield, latest due, 5:07, arrived 4:51. Hartford, latest due 6:41, arrived 7:37 p. m. New York, latest due 5:18, arrived 6:12 with tire falling from rear wheel. Wins bronze medal.

No. 4, George M. Holley, Bradford, Pa., 2¼-horsepower Holley. South Framingham, latest due, 10:19 a. m., arrived 9:35. Worcester, latest due, 11:45 a. m., arrived 11:04 a. m. Warren, latest due, 2:16 p. m., arrived 1:14 p. m. Springfield, latest due, 4:24 p. m., arrived 3:26. Hartford, latest due, 6:02, arrived, 5:06. Second day arrived at Meriden at 9:14 a. m., arrived at Bridgeport 11:41, arrived at New York 5:18. Waited 20 minutes around the corner for control to avoid arriving ahead of time. Scores 1,000 points and wins gold medal.

First Four Arrivals. George Holley at Left and Pickard, Roberts, Bernard and Alderman Oatman, in Order Named.

No. 5, George M. Hendee, Springfield, Mass., 1¾-horsepower Indian. South Framingham, latest due 10:54 a. m., arrived 9:34. Worcester, latest due 12:19, arrived 11:04 a. m. Warren, latest due, 2:17, arrived 12:57 p. m. Springfield, latest due, 5:08 p. m., arrived 4:37 p. m. Hartford, latest due 6:42 p. m., arrived 6:11 p. m. Second day arrived Meriden at 9:32, Bridgeport 11:13 and New York 5:14. Reported frequent falls, but machine in good condition. Scores 1,000 points and wins gold medal.

No. 6, George W. Sherman, Brooklyn, 1¾-horsepower Indian. South Framingham, latest due 10:55, passed 9:33 a. m. Worcester, latest due 12:19, arrived 11:45. Warren, latest due 2:17 p. m., arrived 1:08 p. m. Springfield, latest due 5:08, arrived 3:27. Hartford, latest due 6:42, arrived 5:20. Second day arrived Meriden 9:20, Bridgeport 11:58 and New York 5:38. Scores 1,000 points and wins gold medal.

No. 7, O. L. Pickard, San Francisco, 1¾-horsepower Indian. South Framingham, latest due 10:55 a. m., arrived 9:35. Worcester, latest due 12:20, arrived 11:04. Warren, latest due 2:18, arrived 12:48 p. m. Springfield, latest due 5:09 p. m., arrived 3:28 p. m. Hartford, latest due, 6:43, arrived 4.49. Second day arrived Meriden 9:14 a. m., Bridgeport 11:44 and New York 5:18. Scores 1,000 points and wins gold medal.

No. 8, G. V. Rogers, Racine, Wis., 2-horsepower Mitchell. South Framingham, latest due 10:21 a. m., arrived 9:35 a. m. Worcester, latest due 11:47. Did not arrive, having been thrown and injured by side slip.

No. 9, K. H. Beebee, Racine, Wis., 2-horsepower Mitchell. South Framingham, latest due 10.22 a. m., arrived 9:36 a. m. Worcester, latest due 11:48 a. m., arrived 1:15 p. m. with punctured tire. Warren, latest due 1:46, arrived 4:01 with only one pedal. Springfield, latest due 4:27, arrived 6:34. Not reported at Hartford. Decided to abandon con-

test on learning of exaggerated account of accident to his partner, Rogers.

No. 10, W. F. Seaman, Mineola, L. I., 1¾-horsepower Mitchell. South Framingham, latest due 10:56, arrived 9:48. Worcester, latest due 12:21, arrived 11:55. Warren, latest due 2:19 p. m., arrived 2:26 p. m. Springfield, not reported. Abandoned contest.

No. 11, Henry Allmen, New York, 2-horsepower Mitchell. South Framingham, latest due 10:23 a. m., arrived 9:47. Worcester, latest due 11:49, arrived 11:40. Warren, latest due 1:41 p. m., arrived 2:06. Springfield, latest due 4:28 p. m., arrived 6:10 p. m. Hartford, latest due, 6:06, arrived 8:16 p. m. Second day arrived in Meriden 9:56, late at Birdgeport and late in New York. Wins bronze medal.

George Holley—Photographed Immediately After the Finish.

No. 12, Charles M. Burnham, Waltham, Mass., 1¾-horsepower Marsh. South Framingham, latest due 10:57, arrived 9:37 a. m. Worcester, latest due 12:22, arrived 11:31. Warren, latest due 2:20, arrived 1:18. Springfield, latest due 5:11 p. m., arrived 3:48. Hartford, latest due 6:45, arrived 5:32. Second day arrived Meriden 9:49, and not reported after.

No. 14, Harold H. Brown, Boston, 1¾-horsepower Marsh. South Framingham, latest due 10:02 a. m., arrived 9:40. Worcester, latest due 12:23, arrived 12:18. Warren, latest due 2:21, not reported. Springfield, latest due 4:01 p. m., not reported.

No. 15, F. W. Tuttle, Hartford, Conn., 2¼-horsepower Cleveland. South Framingham, latest due 10:02 a. m., arrived 9:39 a. m. Worcester, latest due 11:29, arrived 11:17. Warren, latest due 1:17, arrived 1:34. Springfield, latest due 4:01, arrived 3:58 p. m. Hartford, latest due 5:42, arrived 5:56. Second day, did not stop at Meriden; arrived at Bridgeport at 12:10 and New York at 6:18 p. m. Wins bronze medal and red ribbon.

No. 16, J. M. O'Malley, Hartford, 2¼-horsepower Rambler. South Framingham, latest due 10:03, arrived 9:39 a. m. Worcester, latest due 11:29, arrived 11:24. Warren, latest due 1:17 p. m., arrived 1:06. Springfield, latest due 4:01 p. m., arrived 4:17. Hartford, latest due 5:42, arrived 7:52. Second day arrived at Meriden 9:17, Bridgeport 11:54 and New York 5:18, after awaiting in park for control to open.

No. 17, N. P. Bernard, Hartford, 2¼-horsepower Crescent. South Framingham, latest due 10:03 a. m., arrived 9:40 a. m. Worcester, latest due 11:30, arrived 11:24. Warren, latest due 1:18 p. m., arrived 1:07 p. m. Springfield, latest due 4:01, arrived 3:54. Hartford, latest due 5:43, arrived 5:24. Second day arrived Meriden 9:17, Bridgeport 11:54 and New York 5:18. Also waited for control to open. Scores 1,000 points and wins gold medal.

No. 18, Joseph I. Russell, Hartford, Conn., 2¼-horsepower Columbia. South Framingham, latest due 11:01 a. m., arrived 9:40 a. m. Worcester, latest due 11:30, arrived 11:17. Warren, latest due 1:18, arrived 1:06. Springfield, latest due 4:02, arrived 3:33. Hartford, entered city under tow at 5:31 p. m., and was disqualified.

No. 19, A. A. Hoyt, Whitman, Mass., 1¾-horsepower Marsh. South Framingham, latest due 11:01 a. m., arrived 9:41. Worcester, latest due 12:26, arrived 11:45. Warren, latest due 2:24, not reported again.

No. 20, A. R. Marsh, Brockton, Mass., 1¾-horsepower Marsh. South Framingham, latest due 11:01, arrived 9:41. Worcester, latest due 12:26 a. m., arrived 12:26. Warren, latest due 2:24, not reported. Springfield, latest due 5:16, arrived 4:57. Hartford, not reported. Second day arrived Meriden 10:19, Bridgeport, 12:56.

No. 21, W. T. Marsh, Brockton, Mass., 1¾-horsepower Marsh. South Framingham, latest due 11:02 a. m., arrived 9:53. Worcester, latest due 12:27 p. m., arrived 12:33. Warren, latest due 2:25, arrived 2:23 p. m. Springfield, latest due 5:16 p. m., arrived 4:57. Hartford, latest due 6:50, arrived 6:28. Second day arrived at Meriden at 10:19 a. m., Bridgeport at —, New York 8:58. Wins bronze medal and blue ribbon.

No. 22, "Joe" Downey, Brockton, Mass., 1¾-horsepower Marsh. South Framingham, latest due 11:03 a. m., arrived 9:46 a. m. Worcester, latest due 12:27, arrived 11:32. Warren, latest due 2:25 p. m., arrived 1:22 p. m. Springfield, latest due, 5:16 p. m., arrived 5:12 p. m. Hartford, latest due 6:50, arrived 7:26. Second day passed Meriden 10:30, arrived New York 8:38. Wins bronze medal.

No. 23, H. E. Lane, Brockton, Mass., 1¾-horsepower Marsh. South Framingham, latest due 10:03, arrived 10:43. Worcester, latest due 12:28, arrived 11:18. Warren, latest due 2:26; arrived 1:22. Springfield, latest due 5:17, arrived 5:16. Hartford, latest due 6:51, arrived 8:16. Second day passed Meriden 9:54. Not reported further.

No. 24, Robert Halsall, Brockton, Mass., 1¾-horsepower Marsh. South Framingham, latest due 11:04, arrived 9:36. Worcester, latest due 12:28; arrived 1:12. Announced would not continue.

No. 25, G. L. Marsh, Brockton, Mass., 1¾-horsepower Worcester, latest due 11:35, arrived 11:13. Warren, latest Marsh. South Framingham, latest due 10:07, arrived 9:44. due 2:27, arrived 5:04. Not reported later.

No. 26, L. H. Roberts, Waltham, Mass., 3-horsepower Orient. South Framingham, latest due 10:08, arrived 9:44. Worcester, latest due 11:34, arrived 11:13. Warren, latest due 1:22, arrived 1.25. Springfield, latest due 4:06, arrived 3:37. Hartford, latest due 5:07, arrived 5:06. Second day arrived Meriden 9:32, arrived Bridgeport 12:12. New York, latest due 6:03, arrived 5:18. Waited in Central Park half hour to keep within schedule. Scores 1,000 points and wins gold medal.

No. 27, William B. Jameson, Waltham, 3-horsepower Orient. South Framingham, latest due 10:31, arrived 9:45. Worcester, latest due 11:55, arrived 11:13. Warren, latest due 1:23, arrived 12:57. Springfield, latest due 4:07, arrived 3:38. Hartford, latest due 5:48, arrived 5:06. Second day arrived at Meriden at 9:38, arrived at Bridgeport at 12:21. New York, latest due 6:04, arrived 5:31. Scores 1,000 points and wins gold medal.

No. 28, H. J. Wherett, Brooklyn, 2½-horsepower Stratton. Reported as having met with accident five miles from start.

No. 29, C. Mankowski, New York, 2-horsepower Mitchell. South Framingham, latest due 11:06, arrived 10:09. Worcester, latest due 11:58, arrived 12:01. Warren, latest due 1:49. New York, latest due, 6:30, arrived 9. Wins bronze medal.

No. 30, Charles A. Root, Jr., 1½-horsepower Stratton. Reported as having met with accident five miles from start.

No. 31, Charles S. Henshaw, 1½-horsepower Auto-Bi. South Framingham, latest due 10:34, arrived 9:47. Worcester, latest due 12:32, arrived 11:34. Warren, latest due 2:30, arrived 1:40. Springfield, latest due 5:21, arrived 3:40. Hartford, latest due 6:55, arrived 5:08. Second day arrived at Meriden at 9:43. Not reported further, though ahead of time at every control.

No. 33, E. L. Ferguson, New York, 2½-horsepower Holley. South Framingham, latest due 10:34, arrived 9:48. Worcester, latest due 12:00. Met with accident through collision.

Evolution of Automobile Design as Observed in Supply Trade

BY PERCY J. DASEY.

The rapid changes which mark the progress of the automobile industry are exemplified by the demand for parts and supplies by individuals who are attempting to construct machines according to their own ideas of the fitness of things and observation of the conditions proves conclusively that since this time last year those ideas have undergone an almost complete reversal. Close study reveals the fact that the change is the result of two things; first, the study of the trade papers, and second the opportunities afforded to inspect foreign machines that have made reputations for their makers. The opportunities afforded the public to study foreign construction have been, it is true, comparatively limited, but illustrations and descriptions in the press and the recording and profuse illustration of speed and endurance trials have led to this almost complete departure from previously accepted ideas of design and has created a demand for parts that it is impossible to supply.

About this time last year the trade was called upon to supply tubular running gears almost to the exclusion of other types and the use of gears of that class had its effect upon other parts. Now the trade has changed and there is considerable demand for the reachless or what is known as the foreign type, in which no reaches are used. Accompanying this change of ideas comes a demand for high powered motors in the high and low speed classes, both horizontal and vertical, single and multiple cylinders, which has caught manufacturers unprepared and unable to accommodate the rapidly increasing business.

Transmission gear makers are in the same position for with the call for heavier power came the demand for gears to transmit it properly. In this respect the industry is further behind than it is with motors. There are a number of concerns manufacturing such gears but the demand is far in excess of the supply. The conditions warrant a rapid increase in manufacture to keep abreast of the increased production of motors and running gears.

While transmissions are under discussion it may be well to call attention to the demand for those providing three speeds forward and reverse, as in use on foreign cars. While the makers have looked after the light powered engine the high powered motor calls for a gear with a greater range of operation than two speeds, largely because the change from one speed to another must be made without undue strain on the driving mechanism, which can be accomplished more satisfactorily by making the changes gradual.

The demand for more perfect carbureters is also apparent. The float feed type, patterned after the French, is now called for more frequently than any other, indicating a better understanding of the requirements of a first class motor.

Not long since the writer had a conversation with a maker and called attention to the dimensions of his axles. They were at least ¼ an inch smaller in diameter than the writer considered necessary but he was informed by the maker that they were sufficiently heavy for all purposes to which such a vehicle might reasonably be put. Experience, nevertheless, has proven the writer's deductions correct.

The return trip from Washington Park on Derby day showed a great display of sagged axles. Lightness may, possibly, be a consideration but strength should come first.

What is wanted and must be had is a gear of such ample weight as to preclude possibility of sagging axles or broken frames or spindles. It must be made on the latest approved lines and sold with the assurance that it will not turn up in a few days for repairs. Price is important, but the question of cost is of less importance than stability, especially in the cases of manufacturers who desire to construct "first" machines and do not desire to build their own gears. The requirements at present are solid front axles, not less than 1¼ inches, with spindles to match; rear axles, not less than 1½ inches, solid and continuous from wheel to wheel, with sleeve fitting over it, both running in roller bearings. This of course contemplates that the drive is to be by chain to rear axle. The springs should be half elliptic, mounted on forged body hangers, with sufficient room for deflection under weight. Swing joints should be used to allow for the action of the body and gear in passing over uneven surfaces. Distance rods must be used between the rear axle and a point on the sides of the frame, in line with the center of the transmission shaft. If it is desired to use side chain drive, the rear axle can be made in one forged piece and the differential gear left to be mounted on the transmission shaft.

The drive to the rear axle has been generally used up to date but next season will witness the beginning of a change to the side chain drive, allowing elimination of the split or differential rear axle and substitution of the more substantial solid "dead" axle. The principal reason for failure to adopt the method described, and which is used on a majority of foreign machines, is the difficulty in securing suitable driving wheels with sprockets attached, or of such form that they might be readily attached. That difficulty will soon cease and by the time of next year's shows there will be a number of such gears ready for the market.

With the other changes noted has come the demand for wood and metal wheels of the artillery pattern. Large numbers of wire wheels are still sold but they are generally for light carriages or runabouts. The wood wheel has taken its place on vehicles of medium and heavy weight in company with the tubular wheels, now becoming so popular. The change is welcome and increases the value of a vehicle.

Transmissions, as before stated, with one or two exceptions fall short of what they should be if the experience of our friends across the water counts for anything. True, there are one or two good ones on the market, but a majority are of little value for one or more reasons, principally because they are not heavy enough. Of all the transmissions tested by the writer only one has given satisfaction. All the rest, six in number, have failed, absolutely, to perform their work satisfactorily and have been discarded.

With the increased demand it is strange that attention has not been given to a gear allowing the chain drive to be made directly from the differential to the rear axle when the former is attached to the shaft of a motor whose shaft runs longitudinally with the center of the running gear frame. There is a constant demand, but no such gear is to be had on the open market.

[To be continued.]

Schwab Repremanded by Automobile Club

New York, June 28.—There are rumors that Charles M. Schwab was reprimanded by the A. A. A. officials for his excess of legal speed limits as evidenced by the newspaper stories of his Atlantic City-Philadelphia record and that he resigned. It is now said that the alleged resignation has been withdrawn following an explanation by peace-makers.

A SPEED CHANGE GEAR

Without Sprockets, Internal, Bevel or Sliding Gears, with Two Forward Speeds and Reverse, Friction Clutch and Brake Drum

There is room in the automobile industry for a speed changing device, two speeds forward and reverse, entirely encased and run in oil. The one here described has been adapted from drawings of an English motor vehicle, with slight modifications. The original had sprocket wheels and chain for the reverse speed, and sliding clutches, which, instead of being operated by rocking levers, as shown, were positive.

Figure 1 is a side elevation showing the brake and brake drum, the feet which support the gear casing on

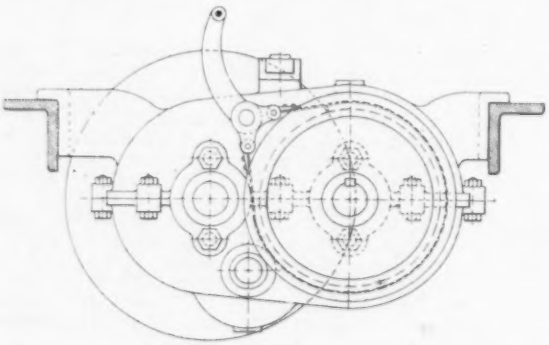


Fig. 1

the running gear, upon angle or other suitable sections, and outside view of the side of the casing proper. Figure 2 is a cross section, through the casing, at the reverse or backward speed gears, showing plainly the driving and driven gears as well as the idler gear. Figure 3 shows the side of the gear casing opposite to that shown in Figure 1. The friction clutch is plainly shown in full end view, with one complete shoe, one with toggle lever, spring and connections removed, and the third with slide for shoe only, so as to plainly show the construction. Figure 4 is a horizontal cross section through the gear casing at its center or parting line. This view shows the interior construction of the speed

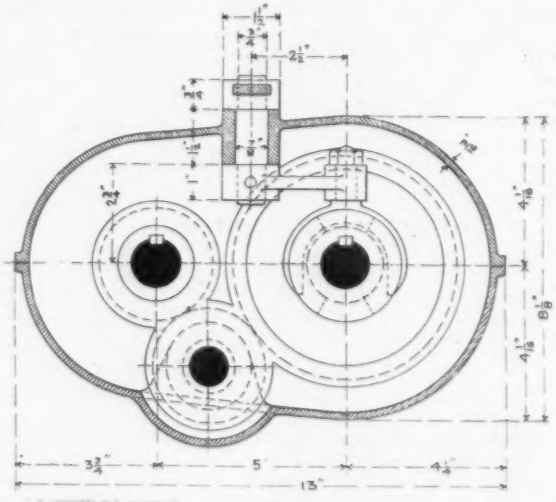


Fig. 2

change gear, and is really of more use than any of the other views, but they must be shown to give an intelligent conception of the whole.

This speed change gear consists primarily of a casing in two parts, three shafts, seven gears, two positive clutches, friction clutch and brake wheel or drum, and has an advantage over any form of sun and planet motion speed change gear, in that when the friction clutch is thrown out of gear with the motor, the entire mechanism is at rest, and the brake set if so desired.

The friction clutch, one view of which is shown at the left hand of Figure 4 and in section, is composed of a drum or internal friction wheel, and a spider carrying three sliding brake shoe arms, which are actuated by the toggle links and sliding sleeve shown in the drawing. The springs which go upon these toggles should be made from square section spring steel of 5-32 to 3-16-inch diameter, and oil tempered. The toggle links are ⅜ of an inch diameter at the part where the spring goes on, and the holes in the springs should be 7-16 of an inch inside diameter, so as to be an easy sliding fit upon the toggle link stems. The hexagon nuts shown at the top or upper end of the toggle link rods are to disengage the clutch shoes, when the clutch is thrown out of gear, by pulling down upon the swivel blocks, carried in the projecting lugs upon each sliding shoe. The sliding shoe brackets or castings are dovetailed into the arms of the spider, and have an angle of 30 degrees on each side, and should be a nice working fit in their respective guides. The friction clutch drum, shoes, spider and sliding sleeve should be made of semi-steel or some other process metal of equal strength and density, or cast steel may be used instead. The friction shoes are made of ⅜-inch thick vulcanized fiber, which can be readily bent to shape by soaking in hot (not boiling) water, and are attached to the shoe arms by No. 10-32 flat head machine screws. A sprocket wheel is shown attached to the inner side of the friction clutch drum. This is to take the drive from the motor by means of 1-inch or 1¼-inch pitch roller chain, not less than ½ inch wide. The four main bearings for the driving and driven shafts are solid and should be made of phosphor bronze. The two shafts are 1¼ inches diameter and can be of cold drawn or rolled steel. The driving gear on the first motion shaft are also of phosphor bronze, while the gears on the second motion or driven shaft should be of cast steel of best quality.

The positive clutches which operate the speed change gears are also to be of cast steel, and the jaws in these as well as those on the driven gears can be cast in, and finished afterwards. These clutches are of the three jaw type, 3 inches outside diameter, ½ inch deep and wide. The clutch operating levers can be made of semi-steel or high grade cast iron, and the yokes of bronze or very hard brass. The collars which hold the driven gears in position on the shaft are to be made from 2-inch steel and turned to 1 15-16 inches outside

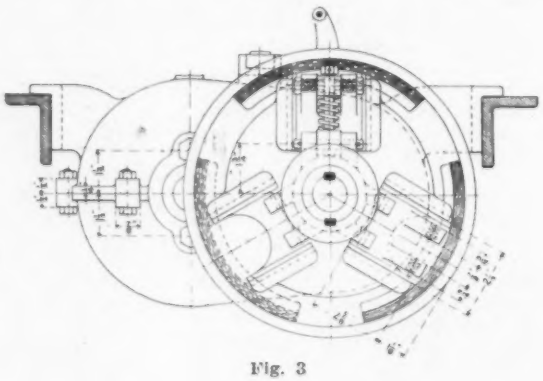


Fig. 3

diameter, while the recesses in the clutch jaws in the hubs of the gears are 2 inches inside diameter and ¾ inches deep from outside end of hub. These collars are secured to the shaft by ⅜-inch headless cup point set screws, the points of which should be countersunk about 1-16 of an inch into the shaft. The driven or loose gears should have phosphor bronze bushings as shown, which should be driving fits in the hubs of the gears, and are 3-16 of an inch thick.

The two positive square jaw clutches on the driven shaft are carried upon and operated by feather keys, ⅜ by ¼ inch wide, which should be fastened in the shaft by means of two No. 6-32 flat head machine screws. The driving gears are fastened to the shaft by means of similar keys, which however do not need any screws to hold them in position, as the hubs of the gears should be tapped for ⅜-16 square head set screws. A collar is needed for the right hand end of the driving shaft, which is similar to those on the driven shaft, and of the same dimensions.

The brake drum or wheel should be of semi-steel or high grade cast iron, and the end of the driven shaft is turned down to 1⅛ inches for the hub of the same, and also to receive the gear or sprocket to transmit the power to the rear wheels of the vehicle.

The gears are all of No. 6 diametrical pitch, and 1-inch face. The fast speed gears are each 5 inches pitch diameter, the slow speed gears 3 1-3 and 6 2-3 inches pitch diameters, and the reverse gears, two of 3 inches and one of 6 inches pitch diameters respectively.

The gear casing is made of aluminoid, and is in two parts. Each half should be planed on the flange face; then four of the holes should be drilled in each half, for 5-16-inch bolts. After these are in place, the rest of the holes should be drilled and made for a reamer or driving fit. The side facings for the bearing bushing or brackets can then be planed off and the bearing brackets fitted, with shafts and gears in place.

Figure 5 slows the bearings and shaft for the reverse or backward speed idler gear and shaft. These bearings should have cored holes as shown, and after the rest of the gear case mechanism is assembled, this shaft and gear can then be put in place, and babbitted, saving time and expense which would be incurred if the bearings were bored out and bushed. No. 1 genuine babbitt should be used. The gear should be securely fastened to the 1-inch shaft by a ⅜-inch square head set screw, so as to compel the shaft to turn in its bearings, instead of allowing the gear to run loosely on the shaft.

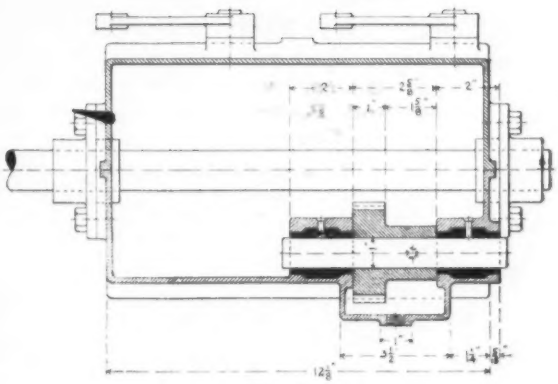


Fig. 5

The other view of the outside levers which control the two positive square jaw clutches inside the gear case is given in this drawing. Two oil holes at least 3-16 of an inch diameter should be drilled in the top of these bearings. Bosses are shown on top and bottom of the casing for ⅜-inch pipe tap. The upper one is to put oil into the casing and the lower one to drain the waste or used up oil. Three-eighth inch pipe plugs should be put in these tapped holes.

This gear will transmit from 5 to 7½ horsepower at from 600 to 750 revolutions per minute, and if properly constructed, will make a satisfactory apparatus, which will stand up under all conditions, within the limit of its rated capacity.

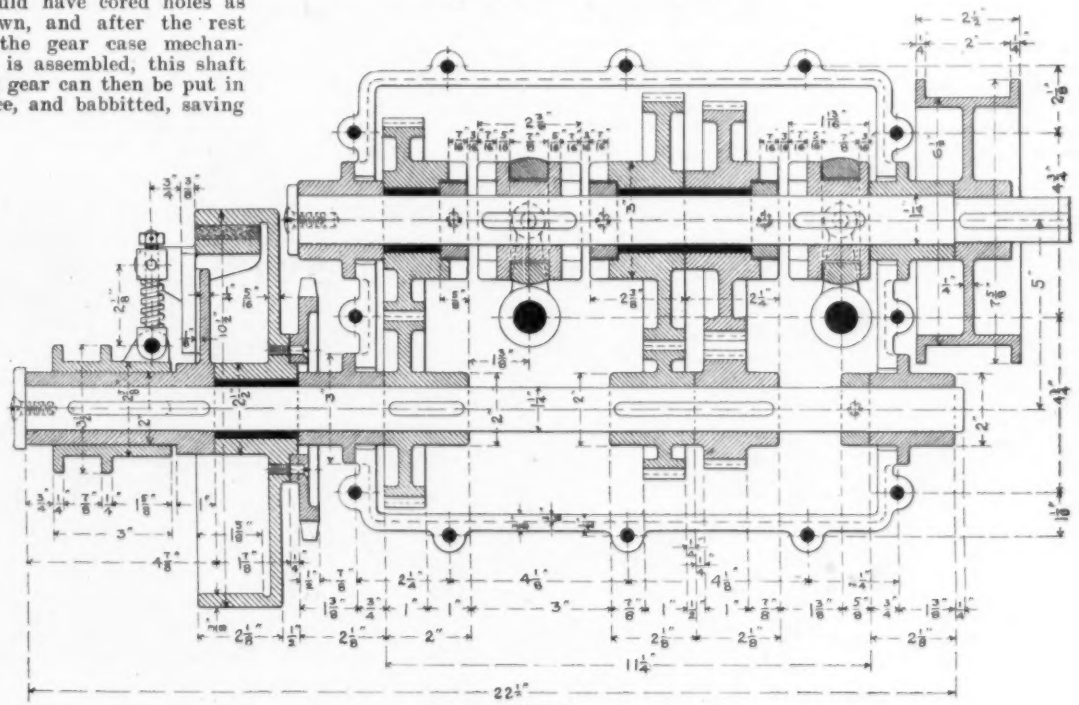


Fig. 4

Pittsburg, Pa., July 1.—The Pittsburg Automobile Co. opened its new repository in Centre avenue on June 28 with a reception. Out of town guests were there from New York, Cleveland, and Chicago. The establishment, decorated with palms, had thirty stock carriages of the newest models, as well as many loaned by automobilists. Able demonstrators explained the mechanism of the motor vehicles, and the members of the company, assisted by a number of prominent Pittsburg motorists, took the guests riding over the boulevards. Light refreshments, punch and cigars were served. A military band added to the gaiety.

The repository is 120x130 feet, and is well equipped. So complete is it that Windsor T. White of the White company came down to see the plans, as his company expects to construct a new building in Cleveland. Mr. Goss of the Baker company, Cleveland, and Mr. Cryder of the Gasmobile company of Jersey City, also came on for the event.

TO GATHER WESTERN TRADE

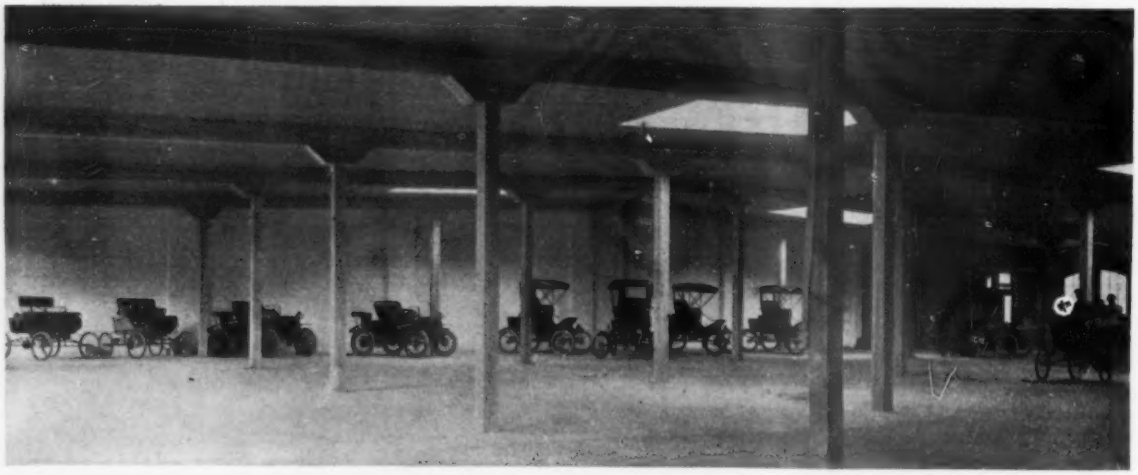
Noera Company Will Locate Branch in Chicago for Sale of Lamps

The Noera Mfg. Co., of Waterbury, Conn., expects in a short time to locate a branch office in Chicago to take care of the western trade. This company manufactures seven types of automobile lamps, beside a full line of pumps, grease cups, water glass reflectors and other automobile sundries. One of its most popular types of automobile lamps is the New Era, an acetylene lamp having a large gas chamber and brilliant side lights. This has no valve to adjust and the flame is regulated by simply turning on or off. It throws a powerful light, is remarkably easy to clean and as a side lamp is recognized as one of the most satisfactory. It has a capacity of 8 hours. Another is the Meteor, which is seen on many of the high powered machines. This is intended for a headlight and has a one-half foot burner, red side lights, powerful reflector and two green lights above the big front lamp. The lamp is made entirely of brass and is a fine sample of American workmanship.

NON-STOP RECORD RUN

Decauville Ten-Horsepower Carriage Travels Four Hundred Miles in Twenty-One Hours Without a Stop

Following up the successful non-stop run recorded last week of 312 miles, says the Autocar, the Motor Car Co., Ltd., arranged for a return run from Edinburgh to London, by Berwick, Newcastle, and York, to show that it was possible to drive intermittently for 400 miles. The same 10-horsepower Decauville was used as on the former occasion, and the trial was a complete success, the whole journey between the two cities being accomplished on the more rigid of the two definitions of the term "non-stop run," viz., that there were to be no stops for tires, as well as no stops for mechanical adjustments. The car also carried its full



THE PITTSBURG AUTOMOBILE CO.'S STATION, OPEN ED LAST WEEK.

supply of gasoline for the whole journey. By careful driving in towns, and the judicious approaching of level railway crossings, the run was accomplished without any traffic stops, as well as without mechanical or tire troubles. Probably in the event of any longer non-stop runs than this present record of 400 miles being attempted, it would be feasible to arrange relays of drivers, for the theory that while one man drives the other should sleep hardly works out in practice in accordance with expectation, and even with alternate drivers the observer has to keep an open eye, which for 20 hours 40 minutes consecutively becomes a trifle monotonous. Mr. Bidlake undertook this duty, as on the previous run, and informs us that the car ran with absolutely no incidents to record of any description. Two such runs of 312 and 400 miles establish beyond doubt the long-distance touring capacity of these extremely reliable carriages.

FRIEDMAN SURPRISES VETERANS

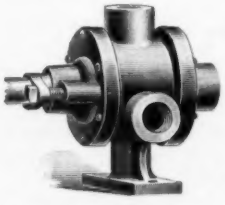
Holds its Own With High-Powered Vehicle and Carries Four Passengers Quarter of a Century

Within the last week Friedman machines have been given severe tests on the roads around Chicago. Friday and Saturday of last week a new machine was run over a course west of the city on what are called roads for the want of a more truthful description and carried its passengers through places that would have stalled a less powerful and easily handled machine. Sunday a run over the endurance course was undertaken, the vehicle used carrying three passengers though intended for only two. It was in the hands of Mr. Robinson, one of the best operaters in the city, who drove the little machine to Wheeling, finishing there just a half mile behind a well known touring car of more than double the power. As the run had been made with comparatively late ignition, the result was remarkable. At Wheeling the ignition was set a notch ahead so as to increase the speed of the motor, the result being that after leaving the town the little wagon ran faster than its big companion, much to the surprise of every one in the party. As it was, the result of the first stage of the run astonished many of the old timers who had never before seen the machine on the road. Later in the day the wagon took on a fourth passenger, carrying the quartette over 25 miles of vile road, into the city.

LOBEE CIRCULATING PUMP

Important Device Which is Recommended by Practical Men in the Trade

The device illustrated is the Lobee rotary circulating pump. The statements made in the following description, condensed from the company's literature, are borne out by the experience of people in the automobile business by whom the pump has been tested.

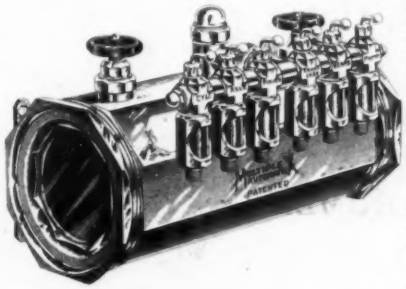


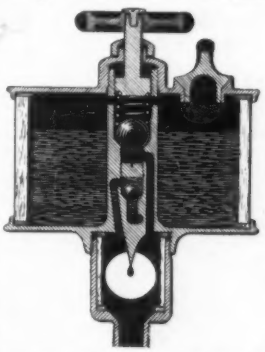
The pump is especially adapted to gasoline motors used on automobiles, launches and for stationary gas or gasoline engines and pumping gasoline for gasoline engines. It gives a positive circulation to the cooling water and can be operated at low or high speed without effecting the efficiency, and can be run as high as 1,500 revolutions per minute. It is almost noiseless, positive in action, simple in construction, durable, efficient, easily operated, either by sprocket and chain, pulley and belt, geared, direct connection or hand power. It will pump steaming hot water. All parts are made to template, therefore are interchangeable, and parts can be quickly replaced. The pump will work in any position, and the suction and discharge can be used reversable. The suction and discharge openings are both made for one-half inch connections unless otherwise ordered, but can not be made larger. All pumps have an arrow on shaft indicating the way pump is intended to run. Sprockets, pulleys, gears, etc., are not furnished except upon application. Where pump is not in daily use, it is advisable to use a bronze pump to avoid accumulation of rust. The capacity with ½-inch connections is 1 gallon at each 10 revolutions per minute. The dimensions are as follows: Length, including shaft, 7 inches; width, 4 inches; height, 4⅝ inches; base or foot, 4x1¼ inches; size of shaft, ⅝ inches; weight, about 5 pounds. The pump is made by the Lobee Pump and Machinery Co., 140-152 Terrace, Buffalo.

POSITIVE LUBRICATING DEVICE

Operates Under Pressure of Motor and Only When Engine is in Operation

The Automatic Lubricator Co., of Toledo, manufactures oiling devices for the cylinders and other parts of stationary, marine and automobile explosive motors which operate on an entirely different principle to the ordinary sight feed oilers, being positive in feed and easily controlled. The sectional illustration shows the internal construction of the device. It is simple and unlikely to get out of order if ordinary care is taken to keep it clean. The oil is carried in the large chamber and is fed into the small one, where the small ball is located, by means of the passage under the ball and then from above the ball down past the glass opening into the engine. The feed is caused by the pressure of the explosion passing up the passageway to the large ball and raising it from its seat, thus causing a pressure to be exerted on top of the oil, which in turn is forced downward and then up under the small ball, owing to the fact that the large ball, after seating itself, acts as a check. The small ball prevents the oil being forced back into the tank because of the oil being led from the top of the check. By means of a gang-feed oiler placed in connection with the cylinder of an engine of the explosive type, all parts of a machine can be lubricated by the same pressure that feeds the cylinder, the quantities of oil needed for lubricating the different parts being regulated by the pressure of the coiled spring on top of the large ball located at the top of the central column; the greater the compression of the spring the less pressure exerted on the oil and therefore the less oil forced up under the small ball check into the feed pipe.





supply of gasoline for the whole journey. By careful driving in towns, and the judicious approaching of level railway crossings, the run was accomplished without any traffic stops, as well as without mechanical or tire troubles. Probably in the event of any longer non-stop runs than this present record of 400 miles being attempted, it would be feasible to arrange relays of drivers, for the theory that while one man drives the other should sleep hardly works out in practice in accordance with expectation, and even with alternate drivers the observer has to keep an open eye, which for 20 hours 40 minutes consecutively becomes a trifle monotonous. Mr. Bidlake undertook this duty, as on the previous run, and informs us that the car ran with absolutely no incidents to record of any description. Two such runs of 312 and 400 miles establish beyond doubt the long-distance touring capacity of these extremely reliable carriages.

FRIEDMAN SURPRISES VETERANS

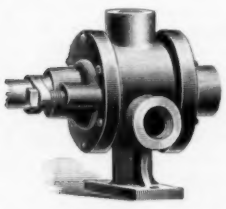
Holds its Own With High-Powered Vehicle and Carries Four Passengers Quarter of a Century

Within the last week Friedman machines have been given severe tests on the roads around Chicago. Friday and Saturday of last week a new machine was run over a course west of the city on what are called roads for the want of a more truthful description and carried its passengers through places that would have stalled a less powerful and easily handled machine. Sunday a run over the endurance course was undertaken, the vehicle used carrying three passengers though intended for only two. It was in the hands of Mr. Robinson, one of the best operaters in the city, who drove the little machine to Wheeling, finishing there just a half mile behind a well known touring car of more than double the power. As the run had been made with comparatively late ignition, the result was remarkable. At Wheeling the ignition was set a notch ahead so as to increase the speed of the motor, the result being that after leaving the town the little wagon ran faster than its big companion, much to the surprise of every one in the party. As it was, the result of the first stage of the run astonished many of the old timers who had never before seen the machine on the road. Later in the day the wagon took on a fourth passenger, carrying the quartette over 25 miles of vile road, into the city.

LOBEE CIRCULATING PUMP

Important Device Which is Recommended by Practical Men in the Trade

The device illustrated is the Lobee rotary circulating pump. The statements made in the following description, condensed from the company's literature, are borne out by the experience of people in the automobile business by whom the pump has been tested.

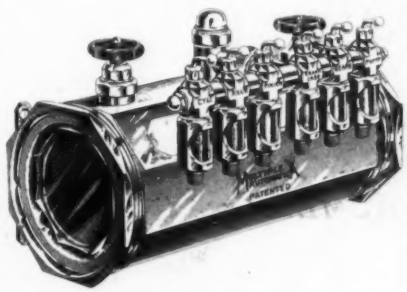


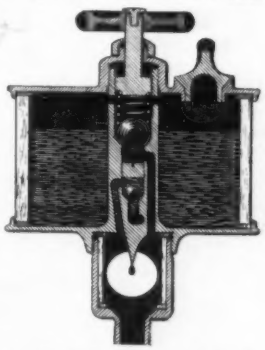
The pump is especially adapted to gasoline motors used on automobiles, launches and for stationary gas or gasoline engines and pumping gasoline for gasoline engines. It gives a positive circulation to the cooling water and can be operated at low or high speed without effecting the efficiency, and can be run as high as 1,500 revolutions per minute. It is almost noiseless, positive in action, simple in construction, durable, efficient, easily operated, either by sprocket and chain, pulley and belt, geared, direct connection or hand power. It will pump steaming hot water. All parts are made to template, therefore are interchangeable, and parts can be quickly replaced. The pump will work in any position, and the suction and discharge can be used reversable. The suction and discharge openings are both made for one-half inch connections unless otherwise ordered, but can not be made larger. All pumps have an arrow on shaft indicating the way pump is intended to run. Sprockets, pulleys, gears, etc., are not furnished except upon application. Where pump is not in daily use, it is advisable to use a bronze pump to avoid accumulation of rust. The capacity with ½-inch connections is 1 gallon at each 10 revolutions per minute. The dimensions are as follows: Length, including shaft, 7 inches; width, 4 inches; height, 4⅝ inches; base or foot, 4x1¼ inches; size of shaft, ⅝ inches; weight, about 5 pounds. The pump is made by the Lobee Pump and Machinery Co., 140-152 Terrace, Buffalo.

POSITIVE LUBRICATING DEVICE

Operates Under Pressure of Motor and Only When Engine is in Operation

The Automatic Lubricator Co., of Toledo, manufactures oiling devices for the cylinders and other parts of stationary, marine and automobile explosive motors which operate on an entirely different principle to the ordinary sight feed oilers, being positive in feed and easily controlled. The sectional illustration shows the internal construction of the device. It is simple and unlikely to get out of order if ordinary care is taken to keep it clean. The oil is carried in the large chamber and is fed into the small one, where the small ball is located, by means of the passage under the ball and then from above the ball down past the glass opening into the engine. The feed is caused by the pressure of the explosion passing up the passageway to the large ball and raising it from its seat, thus causing a pressure to be exerted on top of the oil, which in turn is forced downward and then up under the small ball, owing to the fact that the large ball, after seating itself, acts as a check. The small ball prevents the oil being forced back into the tank because of the oil being led from the top of the check. By means of a gang-feed oiler placed in connection with the cylinder of an engine of the explosive type, all parts of a machine can be lubricated by the same pressure that feeds the cylinder, the quantities of oil needed for lubricating the different parts being regulated by the pressure of the coiled spring on top of the large ball located at the top of the central column; the greater the compression of the spring the less pressure exerted on the oil and therefore the less oil forced up under the small ball check into the feed pipe.





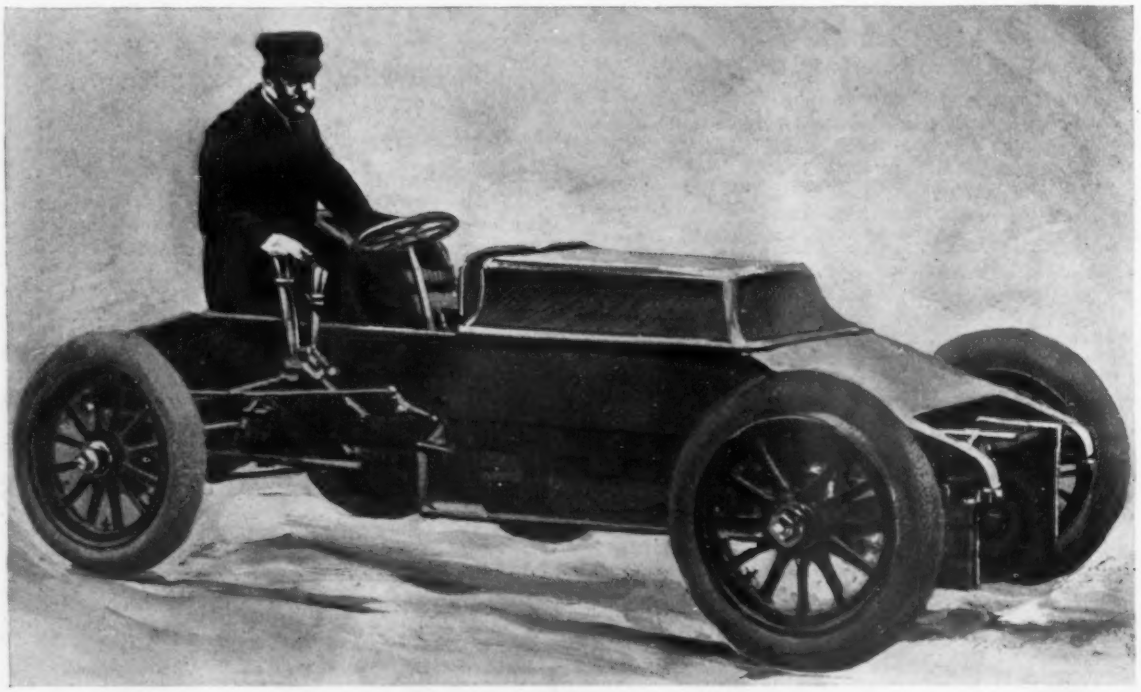
In the gang-feed oiler, a small needle valve at each sight feed regulates the quantity fed into each individual pipe. When the engine stops the oil feed stops, hence there is no danger of flooding.

ENGLISH TEST OF AN ELECTRIC

Maintained Twenty Miles an Hour for Ninty-Seven Miles as a Challenge to Edison

As a reply to the sensational reports concerning the feats accomplished by Edison's new battery, the British Electro-Mobile Co. recently undertook to demonstrate that their car was able to do anything that Edison can lay claim to, says Motor Cycling. The car was made by Krieger, of Paris, and is fitted with two compound motors which drive the front wheels independently.

The battery consists of 44 Leitner cells of 300 ampere hours capacity, and it was calculated that these would run the car 100 miles on a single charge. A speed of 20 miles an hour was kept to—which could have been increased to 40, if necessary, Quite noiselessly and unaffected by the strong wind blowing against it, the car ran on. Down the long hill from the top of Savernake Forest to Marlborough, the motors were reversed and acted as dynamos re-charging the battery, and producing an excellent braking effect—in fact, rendering the application of the mechanical brakes unnecessary. Later on some exceedingly slippery roads were struck, and an alarming incident occured which might have had disastrous results but for the driver's skill in manipulating the car. A violent side-slip occurred, the heavy car sliding sideways down a steep hill, and it had to be slewed right round. The car now began to run backward, and things were beginning to become exciting, and to save the situation the driver had to steer the car into a hedge. Matters were soon righted, however, and the trip continued till on the completion of the 97th mile the cells showed signs of exhaustion. They were then charged up in four hours and the car run on to Windsor, thus completing a run of 140 miles in one day. Under better conditions of road surface there is no doubt whatever the 100 miles would have been accomplished on a single charge.



THE WINTON COMPANY'S RACING CAR.

Forerunner of the Winton of 1903

The new Winton racing machine, which has been dubbed by the daily press the Bullet, weighs slightly over 2,000 pounds, is 14 feet long, 8 feet between wheels and has 32 inch wheels, with 4½ inch tires. Its power has not been announced. It has four cylinders whose size, however, Mr. Winton declined to give. Mr. Winton was recently asked his object in building racing vehicles. "Put a racing car upon a mile oval and let it skid around the turns and dash up and down the straights," he said, "and no strain could be greater and no service harder. During a long racing season the imperfections of any construction are bound to show up, and it is these imperfections and the constant development of the racing car which make it possible for me as a manufacurer to get upon the market with a high-grade standard commercial car which meets the exacting requirements of the average user.

"The present standand Winton touring car of our manufacture is more or less the direct result of my last season's racer. This standard car has by its successes in the various open official events won the championship honors against all foreign and domestic competition in the class to which it belongs."

Locomobile Company of Great Britain

The English business of the Locomobile company will be conducted, hereafter, by the Locomobile Co. of Great Britain, Limited. The management will remain practically the same as heretofore, Mr. Robinson and W.

M. Letts being managing directors, with Mr. Halsey, who has been connected with the company from the commencement, as chairman of the board. The capital of the company is $900,000, divided into 50,000 6 per cent preference shares and 130,000 ordinary shares, of which 30,000 is reserved for working capital. In issuing the preference shares, subscribers are receiving share for share in ordinary shares by way of a bonus, but the whole issue is being taken up privately, the public not being invited to subscribe. This the Automotor Journal thinks is hardly surprising in view of the business which the company has been doing in the past, which shows for the two months of April and May, for which dates the new company has taken over the business, an actual sale and delivery of eighty-one cars at an average of $1,090, leaving sixty-four orders still to be executed. It is certainly a fact that the Locomobile has been pushed with remarkable energy in England, and is one of the best advertised vehicles in that country.

Exports of Automobiles and Cycles

Washington, D. C., July 2.—The figures showing the exports of bicycles and parts for the week just ended from New York are as follows:

Antwerp—Bicycle material, thirty-five packages, $2,171; bicycles, two crates, $60.
Aalesund—Bicycles, one package, $20.
Amsterdam—Bicycles, thirteen cases, $400.
Bremen—Bicycle material, nineteen cases, $1,043.
British East Indies—Bicycles and material, thirty-three packages, $1,784.
British Australia—Bicycles and material, 208 packages, $6,780.
British West Indies—Bicycle material, thirty-seven packages, $763.
British Possessions in Africa—Bicycles and material, sixty-five packages, $4,471.
Copenhagen—Bicycle material, ninety-five packages, $4,660; bicycles, 132 packages, $2,795.
Christiania—Bicycles, one package, $30.
Cuba—Bicycles, 20 cases, $273.
Dutch West Indies—Bicycles and material, four packages, $134.
Dutch East Indies—Velocipedes, one package, $25.
Dutch Guiana—Bicycles and material, 24 packages, $813.
Equador—Bicycles and material, one package, $25.
Gothenburg—Bicycles, three cases, $75.
Geneva—Bicycles, one case, $40.
Glasgow—Bicycles, four packages, $120; bicycle material, two packages, $60.
Genoa—Bicycle material, twelve packages, $620.
Hayti—Bicycle material, one package, $32; bicycle material, five packages, $316; bicycles, nineteen packages, $278.
Hamburg—Bicycles, three packages, $75.
London—Bicycles, ninety packages, $3,433; bicycle material, thirty packages, $1,373.
Liverpool—Bicycle material, six packages, $135; bicycles, 145 packages, $2,720.
Lansonne—Bicycles, twenty packages, $300.
Liege—Bicycle material, five cases, $225.
Mexico—Velocipedes, two cases, $41.
Marseilles—Bicycle, one case, $60.
Moscow—Bicycle material, one case, $10.
Newfoundland—Bicycles and material, six packages, $194.
Peru—Bicycles, one case, $60.
Portuguese Possessions in Africa—Bicycles and material, two cases, $107.
Rotterdam—Bicycles, seventeen packages, $575; bicycles and material, twenty-three packages, $662.
St. Helens—Bicycles, two packages, $80.
Southampton—Bicycle material, twelve cases, $388; bicycles, one case, $35; bicycles, one package, $20.

The figures showing the exports of automobiles and parts for the same period are as follows:

British Possessions in Africa—Auto vehicles, one case, $1,000.
Copenhagen—Motor vehicles, one, $750.
Hamburg—Auto, vehicles and material, two packages, $160.
London—Motor vehicles, twelve packages, $9,360.
Urnguay—Motor vehicles, two, $779.
Vienna—Auto vehicles and parts, one package, $100.

Test of Kerosene Burners

New York, June 30.—An interesting test of a new kerosene burner for steam vehicles was made last week when the Equitable Auto Truck & Power Company, of Lynn, Mass., sent a wagon fitted with its new kerosene burner from the factory to this city, traveling the distance—297 miles—in forty hours. The machine was handled by Captain W. E. Pearson, general manager of the company, who was accompanied by Thomas H. McDonnell, the president. The new burner uses thirty-four parts of air to one of oil. The total amount of oil consumed was 34 1-2 gallons, together with 325 1-2 gallons of water, 12.30 pounds of water being evaporated to each pound of oil. The roads for the most part were in poor condition, with many steep hills. Captain Pearson made his headquarters in this city at the Automobile Exchange on West Thirty-eighth street, where the burner was examined by a number of experts and received considerable commendation.

Egypt Affords a Poor Market

The following information relative to automobiles in Egypt, is supplied by a correspondent of a French paper:

"Last year the first automobiles were imported into Egypt. It was thought that they would lead to a large amount of business, but recent reports indicate complete failure. The principal reason is bad roads. Some roads, especially those from Guiseh to Saggara are fair, but this is about all. Some people tried to use these machines on the great deserts, but their machines stuck in the sand. These trials were made with heavy vehicles, but no better success was met with light ones. Few people knew how to handle an automobile and those who did charged exorbitant prices for repairs. Another reason for the failure is that agents tried to sell the lightest possible machines, and gave the least possible information to customers. We know of cases where a 3 to 4 horsepower machine required $50 repairs per month for many months.

"Wealthy Egyptians are ready to spend money lavishly, but they are no fools. It just took them one year to become discouraged and it is almost unnecessary to try either by mail or by calling to get anybody interested in automobiles. It is doubtful whether this condition will change for a long time. We believe that as soon as good roads have been made around the principal cities, there will be a revival, but the selling agents will have to be more careful and not try to sell as much as they can at the biggest possible profit and never show up again, instead of helping and instructing them and thus make friends of their customers."

Sandusky Company Commences Operations

The recently organized Sandusky (O.) Automobile Mfg. Co. now occupies a temporary factory and the directors expect to take action on plans for their new building this week. F. X. Frantz, formerly of the Frantz Automobile Co., of Akron, is at the head of affairs and expects the company will be able to commence deliveries in November. He says there is no truth in a story recently circulated of a combination of the new concern with Beardsley & Hubbs.

W. C. Allen, of Davis, Allen & Co., 44 Stone street, New York, who manages the London branch of that concern, is at present in this country and is desirous of purchasing, largely, various automobile parts, fittings and above all, a good line of gasoline vehicles.

The Diamond Rubber Co. of Akron, O., issued a noved advertising card on the Fourth of July, "regretting to state that Diamond tires will not explode and therefore enclosing a cannon cracker to make up for the loss."

At a meeting of the directors of the Locomobile company on the last day of June a semi-annual dividend of 3½ per cent was declared on the preferred stock.

Late Issues From the Patent Office

No. 702,980, to Hiram P. Maxim, of Hartford, Conn., assignor to Morton Trust Co., of New York, covers a wheel steering device, the leading feature of which is an arrangement whereby it may be moved longitudinally of the vehicle without interfering with its effectiveness in steering. The bottom of the steering pillar is provided with a worn gear meshing in a worm gear on the steering arm and is journaled in a bracket which is pivoted concentrically with the steering arm. The front of this bracket is provided with a toothed segment adapted to receive a dog attached to the floor of the vehicle and by which the bracket is held in position. When it is desired to alter the position of the steering pillar the dog is disengaged from the bracket and the wheel is revolved as in steering, which tends to move it in a forward or backward direction, according to the direction of rotation.

No. 703,391, to Peter Paulson, of Chicago, Ill., assignor to Simon Mayer and W. F. Corey, of same place, covers a variable transmission gear comprising a series of intermeshing gears of differing ratios, all loosely journaled on two parallel shafts. Each gear is provided with an expansible ring clutch whereby it may be rigidly fixed to the shaft and thus as two intermeshing gears are fixed on their respective shafts they become operative as a driving train, one of the shafts being driven by connection with the motor and the other being geared to the rear wheels in suitable manner. The above mentioned shafts are tubular and within the bores thereof are two rods serving to operate the clutches. The rods are provided with cam faces, which act on small plunger rods which in turn act on the expansion arms of their respective clutch rings. The operating rods are longitudinally slidable in the gear shafts and are held in fixed relation to each other by means of a yoke at one end, and the cam faces for each pair of intermeshing gears are in lateral alignment with other, so that both gears are locked to their respective shafts at the same instant. The operating mechanism of the cam rods is a rack and pinion controlled by a hand wheel located convenient to the operator.

No. 703,374, to Daniel S. Bergin of Chicago, Ill., covers an electric vehicle designed to derive its electromotive power from an overhead trolley. The leading feature is a telescopic trolley pole which is secured to the vehicle by a universal joint which permits considerable lateral variation in the relative position of the vehicle with respect to that of the line conductors.

No. 704,434, to George A. Weidely, of Indianapolis, Ind., assignor to the G & J Tire Co., is devoted to a detachable tire for vehicles. The tire is in many respects identical with that company's present pattern of vehicle tires, the distinctive feature being the rim, which is divided longitudinally, one part being removable from the wheel. The two sections of the rim are held together by transverse bolts and by removing these bolts the tire is readily removable. Two forms are shown, one for wire wheels and one for attachment to wood fellys.

No. 701,464, to E. S. Burrowes, of Portland, Me., covers a water cooler for gasoline vehicles. The device consists of an oblong tank to be suspended below the bottom of the carriage body and is arranged to allow a current of air to pass through while the vehicle is in motion. With this end in view the tank is made in two compartments, one above the other. The bottom of the upper compartment and the top of the lower is corrugated. Between these plates are baffle plates similarly corrugated. The plates are so arranged that the lower bend or trough of one plate is directly over the apex of the corrugations of the plate directly under it. All the plates are perforated along the lower lines so that the water may be allowed to drip from one plate to the other. Thus the water will pass from the upper compartment to the lower and as the corrugations in the plates line longitudinally of the vehicle the air will pass over and through the water as it flows over the plates and cool it in transit. The suction pipe from the circulating pump draws from the lower compartment and the water from the cylinder jacket is delivered to the upper compartment.

No. 701,533, to Clarence C. Bramwell, Hyde Park, Mass., covers a driving mechanism for automobiles. It is well known that while power can be transmitted through a worm to a meshing worm gear the device is locked from operation when the worm ceases to act as the prime mover, and such a device has been applied to a motor vehicle, the worm movable into or out of mesh with the worm gear. This arrangement was due to the necessity of uncoupling prior to shutting off power in order that the locking action, which operates instantaneously, should not bring the vehicle to such a sudden stop as to throw the occupants out. In order to avoid some objectionable features in connection with the above arrangement the inventor has designed a driving mechanism, the principal feature of which is a clutch mechanism between the motor and the worm and a flywheel in connection with the worm so that even should the power be shut off the worm will continue to rotate long enough to avoid the too sudden stoppage of the vehicle.

No. 700,768, to W. A. Hatcher and James W. Packard, of Warren, O., covers a multiple oiler with an automatic cut-off, so arranged that the opening of the relief cock on the motor closes the cut-off, which is again opened when the relief cock is closed. It is assumed by the inventors that the relief valve will be opened when the motor is stopped and the oil feed will be thereby stopped till such time as the motor is started, when the closing of the relief cock will cause the resumption of the oil feed. The oiler is designed to supply not only the motor but all the various mechanism of the vehicle.

Nos. 700,772 and 700,926, to Bohn C. Hicks, of Chicago, Ill., are both devoted to a driving apparatus for motor vehicles, comprising a separate road wheel for the purpose. The former covers in detail the five wheeled carriage seen on the streets of Chicago during the latter part of last year. This machine has an auxiliary driving wheel in the center of the rear axle, which is arranged to allow of a limited vertical movement of the driving wheel in relation to the regular road wheels to conform to the equalities in the road.

Nos. 700,784, 700,785 and 700,786, to Albert L. Kull, of Camden, N. J. The first covers a form of construction in which the motor is rigidly secured to the frame, the gasoline tank is located in the back of the seat and the connection between it and the motor is sufficiently flexible to allow for the movement of the body. The second covers a muffler of unique construction. The outer shell, which is cylindrical, is provided with two transverse partitions in which are secured a number of perforated cones with the taper ends thereof toward the outlet end of the muffler, which is also perforated. The last numbered covers a system of power transmission particularly adapted to a vehicle built on the lines of that covered by the first described patent. There are no radical features in this device and the distinctiveness is mainly a matter of detail.

My Dear William—Fred again took me to ride in his automobile to-night, and he was just as kind as he has been ever since you left on your long trip. I do wish your business out on the coast was in Halifax, and you could let it stay there and come home, for I am dying to see you. This being engaged without one's lover is really too hard.

Fred squeezed my hand to-night, and I just let him, because you trust him so much, and I just imagined it was you, sweetheart. Your true and loving May.

* * *

My Dearest May—Indeed it is too bad to be still delayed month after month, and not see your pretty face, not to speak of kissing your cherry lips. But it will not be long now, for I shall soon begin to do up the miles between here and you. Cheer up! Fred is a good fellow to take you out so much, and I know you enjoy it. I could not scold you, and you can let him love you a little bit, if you like. Your loving William.

* * *

My Own Dear William—Well, I had a splendid time last night, and it was so good I did just let Fred kiss me through my veil as we were out on the road where none could possibly see or know. I only wish it had been you. But I made sure to say I would think it was you, William. Now the next evening we are out together I suppose he will think he is William. Good-night dear. Your true little girl, May.

"People are Noticing."

My Own True May—Still the days drag on, and I cannot be near you! Well, I wish I were Fred; I just envy him. Don't let him love you too much, however, May. Good-night. Your faithful (but lonely) William.

* * *

My Dear Will—Well, Fred and I were at the theater to-night, and I am just alone. I would be awfully lonely without him and you gone. He did give me a good hug to-night, and it just made me think of old times with you—before you started off on this horrip trip. Fred stayed until twelve o'clock to-night; but he says he must not come so often, as people are noticing. Well, good-night, Will dear, and be good.

Your true little girl, May.

* * *

My Dear Little May—Still away from you, and you all alone except for Fred. Well, people are fools that don't mind their own business. Fred is all right, and would not betray the slightest confidence of mine. I am not a bit jealous, love; but I could show Fred how you should be kissed to get all you deserve! Well, bye-bye; sleep with the angels. Your own true William.

* * *

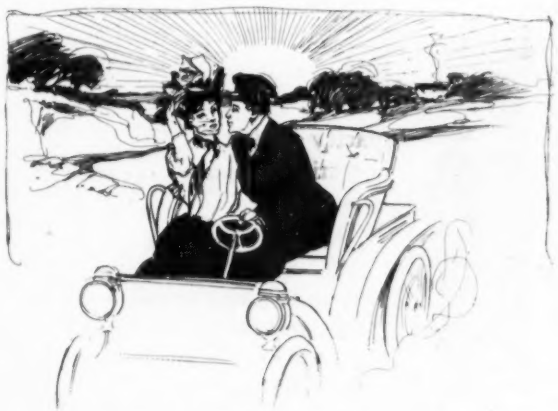
(By telegraph.)

William Farleigh, Hotel Carwheels—May leaves 10 p. m. train to be with sick father. Fred Martin.

* * *

(By telegraph.)

James Thompson, Homeville—No word for a week



"Where Nobody Could Possibly See or Know."

from May, since Fred wired going to Jonesboro. Don't understand; wire particulars. Farleigh.

* * *

(By telegraph.)

William Farleigh, Hotel Carwheels—May and Fred reported to have eloped on Fred's automobile. Can't explain. Awful sorry. Thompson.

* * *

(By telegraph.)

James Thompson, Homeville—Closest shave yet, old man; but my luck brings me through as usual. Will marry best girl on coast inside month; fortune in the bargain. Congratulations are in order. Farleigh.

* * *

(By telegraph.)

James Thompson, Homeville—Forgot to say roads out here superb. Order best automobile you can get, and draw sight on me. Will make Fred's choo-choo cart look like thirty cents when I come East this summer with Belle. Ha! ha! Farleigh.

THE CYCLE AGE

New York, July 5.—Despite three interruptions by heavy showers, the Metropolitan Cycling Club pluckily put through its postponed programme for the revival of bicycle racing in New York on a big scale at Manhattan Beach this afternoon. As the crowd left the city clouds gathered and rain fell, yet 7,500 people poured into the grand stand, bleachers and field. There were 4,000 in the stand at 25 cents, 300 in the boxes at 50 cents, and the rest of the great throng came in on invitation admission tickets, bought largely and distributed freely by makers, dealers and clubmen. As a revival it promises to be effective. It proved that rich prizes will bring all the riders and that the public is ready to greet with crowded seats and unbounded enthusiasm really first class bicycle racing.

There were 193 amateurs and forty-nine professionals entered and not a rider known to special fame in either class within 50 miles of New York was missing. The prizes drew them. For the amateurs there were bicycles for first prizes in the novice and to the winner and leader at the most laps in the 5-mile open, while to the winner of the 2-mile handicap was given a Columbia motor bicycle. Besides good money in the open, the professionals were given $200 in the Metropole Sweepstakes, a 5-mile handicap, with the entrance money added to the $100 that went to the winner.

With such an enormous field of entries, large numbers had to be started at once in the heats and in the finals, and in some cases all in a bunch without preliminary heats. There were eleven trial heats of the "Orient Tryout," a quarter-mile dash for novices, the winners only riding in the final. The 5-mile open was split into four trial heats at a mile, giving twenty-eight in the final. The "Seaside Dash," a flying start third of a mile for the money-chasers, was divided into five trials with ten in the final. In the "Metropole Sweepstakes" at 5 miles some forty "pros" were sent off at once, and in the Columbia 2-mile handicap a field of forty-seven amateurs started and but one man fell.

The Seaside Dash was a beautiful contest throughout. Eddie Bald won his heat in old time impressiveness and got a rousing sendoff. "Plugger Bill" Martin, the globe trotter; Fred Beauchamps (pronounced "Beecham"), the Australian crack; and Ion Lawson, the Salt Lake crack, were started in the fifth heat. Lawson alone qualified. The final was a surprise and marked the first defeat champion Kramer has met in an open race this season. The men rode a lap before the pistol fired for the start. At the head of the back stretch Kimble jumped forward in order by Sullivan and Collett. At the turn entering the stretch the field had Kramer pocketed at the pole. Suddenly out from the bunch on the outside jumped Fisher, the Chicagoan. Tearing down the straight with lightning speed the lazy Hercules once in a while uncoils, he won the race by a foot in 36 seconds with a packed bunch at his heels. Kimble was second, Collett third and Sullivan fourth. Kramer was shut in and did not persevere.

The Metropole Sweepstakes had Plugger Bill, Kramer and Lawson on scratch, Beauchamp and Collett at 50 yards and Bald and Fisher on the "hundred" mark. Martin Beauchamp and Lawson had not had time to renew their form since their arrival and could contribute nothing to the pacing in the pursuit of the middle and long markers. Kramer and Bald each made an unpaced effort to catch the bunch, only to fall back into an aggravatingly lazy lot of back markers. Tom

Walter Smith, Brooklyn's Phenomenal Youngster Who Defeated Hurley at Vailsburg

Butler (200) won by a length in a fine finish among the middle and long markers in 10:56 3-5, with Newkirk (250) second, Saxon Williams (250) third, and Menus Bedell (300) fourth.

Thanks to the big field of twenty-eight starters and the bicycle offered to the leader at the most laps the final of the 5-mile open was a stirring struggle, with racing all the way. Lewis Bennett and H. D. Hooper fought it out for the lap prize. The former led at five of them and won it and the latter at three. In the lap before the bell Rockowitz made a bold bid for a run-

away. He led by 100 yards at the gong. Glasson then set sail for him, with Hurley in tow, and caught him at the last turn. Dove went by the two cracks with the field following and in a jiffy Hurley was in a pocket. Fifty yards from home Billington made a great run for the tape and won from Hooper by half a wheel in 11:47 3-5. Hurley managed to get through into third place.

For a fitting windup to a great program forty-seven riders were sent off in a bunch in the Columbia 2-mile handicap. J. E. Achorn, Jr., (90) secured the motor bicycle and the Metropole amateur blue ribbon by half a length from D. J. Quille (100) in 4:14 2-5. Lewis Bennett (90) was third and C. F. Offerman (210) was fourth.

A 20-mile, three-cornered, motor-paced race preceded the amateur handicap. Tommy Hall had a 10-horsepower tandem against 4-horsepower motors for Munroe and Lawson. They finished in this order with two laps and a half lap intervening. The time was 31:02 2-5.

SMITH OUTSPRINTS THE CHAMPION

Hurley Finishes in Fifth Place but Later Makes a Record—Serious Falls

Newark, N. J., July 6.—To-day's racing at Vailsburg was eventful. The sensations started with Champion Hurley being shut out in the final of the half-mile amateur open. Townsend jumped early for a runaway. Schlee went after him the last lap and beat him at the tape. The other ten hung back and in the final sprint of the back markers Walter Smith and George Glasson both beat the champion.

Forty-four riders started in the 5-mile amateur handicap at once, and here Hurley made good once more by winning in 10:56, which supplants the world's amateur competition record of 11:09 1-5 made by himself at this track on June 9 last. There was a bad spill in the backstretch of the last lap, where the great field rode bunched, the back markers having caught up at 46 miles. Billington and Achorn were badly hurt. It was said both had received broken collar bones. Hurley dodged the spill and romped in alone with Garrabrant (200) second, Beyerman (200) third and Schlee (50) fourth.

Both Munroe's motors went wrong in the twelfth mile of his 25-mile paced match with Caldwell, who rode the distance in 38:48.

Kramer, Collett and Bald tried to make post entries for the 2-mile handicap, but were barred under the management's new rule. Lawson was put at scratch, Martin at 60 and Beauchamp at 90 yards. The middle markers were never caught. Alexander (150) won in 4:00 2-5, with Carni (150) second, Franz Krebs (180) third and King (180) fourth.

GREAT RACING IN EUROPE

Two Days of the Grand Prix of Paris—Long Distance Championships at Berlin

The first day of the Grand Prix was held on June 22 and nearly 10,000 people saw the preliminary heats, which were won by: Ellegaard (Dane), Meyers (Dutch), Rutt (German), Grogna (Belgian), Arend (German), Momo (Italian), Mayer (German), and Domain (French). Among the defeated were Jacquelin, Vanden Born, Jenkins, and Gascogne. The annual tandem race proved a decided hit. The final between Ellegaard-Arend; Meyers-Rutt and Grogna-Didiers will not soon be forgotten. The last named led until a lap before the bell when the Meyers team took the lead to be passed by the Danish-German combination. The two leaders began a rare close finish. The Meyers team gained by inches but Ellegaard and his partner won. The Ellegaard-Arend team won the same event last year.

A day of surprises was the second day of the Grand Prix. The consolation race, the winner of which is qualified for the finals of the Grand Prix was run off without anything sensational. In the first semi-final Jacquelin, Didiers-Nauts and Cornet met. It was almost a walkover for Didiers. Jacquelin was last. Heller won the second while Bourotte played with Jenkins and Gentel in the last. Heller unintentionally cut Didiers out in the final and Bourotte won, but was disqualified and Didiers-Nauts given the race. Another great race proved to be the foreigners' prize. The four heats were won by Meyers, Ellegaard, Arend and Rutt. In the final, before the last turn the Dane and the Dutch were neck and neck. Amidst the wildest excitement the two champions were coming home. Within a few yards of the tape, Rutt, who had kept right up to them on the outside, managed to pass the line with the pair. It was nobody's "first" until the judge pronounced sentence: Rutt first by inches, Ellegaard second, Meyers third.

William Martin, Globe-Trotting Racing Cyclist—Photographed in Motor Age's New York Office

Fifteen thousand followers of the cycle path gathered around the Friedenau track at Berlin on June 22 when the two long distance championships were decided. For the second time Robl captured the much coveted title, bringing the 100 kilometers (62 miles) world record of 1:28:18 2-5 down to 1:24:23 2-5. Bouhours the Frenchman won second honors, Tom Linton third and Taylor fourth. Dickentmann, Sievers and Ryser also ran. The amateur championship was won by Goernemann, lowering the record, which was 1:44:34, to 1:42:49 1-5.

VETERAN BALD, A WINNER

Fourth of July Crowd Starts A Cannonade as He Wins Five Mile Handicap

Newark, July 4.—Eight thousand people saw the Fourth of July races at Vailsburg to-day. Frank Kramer

beat Iver Lawson in their half-mile heat race. The champion won by a length each time.

The sensation of the day was Eddie Bald's win of the 5-mile professional handicap. The ex-champion rode from the 100 yard mark and covered the distance in 10:21 2-5, which is undoubtedly faster than he ever rode 5 miles in before even in his palmy days. The record is 10:15, held by Fenn. A spill occurred just behind as he entered the stretch in the lead. The crowd greeted his victory with pistol firing and great cheering. Bald was much elated by his success and the reception the crowd gave his victory. Williams (250) was second, Armbruster (250) third, Guery (400) fourth and Tom Butler (200) fifth. In the absence of Hurley at Buffalo, George Glasson, Newark's crack, was placed in scratch. He won the half-mile handicap handily in 1:00 1-5 and caught the bunch in the two-mile handicap, in which 37 riders were started together. Mike Coffey won in 4:11 1-5.

CLUB ELECTION IN 'FRISCO

Bay City Wheelmen Hold Lively Meeting and Cheer New President

San Francisco, Cal., June 27.—The rooms of the Bay City Wheelmen were comfortably filled last Tuesday evening with enthusiastic cyclists who were in the rally as delegates to the seventh annual meeting of the California Associated Cyclists. After the reading of the lengthy, exhaustive and interesting reports of President Woodson and Secretary Scovern, both of which reports gave evidence that although laboring against adverse circumstances the past year these officials did effective work toward the maintenance and good standing of the association, officers for the ensuing year were elected, to-wit: President, H. H. Varney; first vice president, A. B. Moffitt; second vice president, L. S. Upson; secretary, S. G. Scovern (third term); treasurer, J. J. B. Argenti. Although Mr. Varney is comparatively a new man in the firmament of things cycling, his nomination for the office of president was so enthusiastically cheered that the other nominees withdrew in his favor and his election by a unanimous rising vote brought forth prolonged applause.

On taking the official chair, President Varney appointed five new members on the racing and records committee, as follows:: C. L. McEnerney, California Cycling Club, chairman; H. L. Delaney, Garden City Wheelmen; T. L. Frey, Oakland Wheelmen; L. S. Upson, Capital City Wheelmen, and A. W. Morganstern, San Francisco Wheelmen.

Chairman McEnerney has been an enthusiast on cycling for many years and is recognized as a leader among the men who have made the sport popular. He is an active member of the California Cycling Club.

Elizabeth-Rahway Road Race

Elizabeth, N. J., July 4.—The annual Elizabeth-Rahway 25-mile handicap was won by George Green, of Rahway (6:00), in 1:06:20 net time. He was followed in order by David Long (6:00), Otto Hardiber (6:00), Albert Davidson (7:00), and Joseph Delner (6:00). Edward Forrest won time prize in 1:02:25 with C. W. Dodd second and Robert Meyers third.

Major Taylor Loses Triangular Race

Crowded to such an extent that the doors had to be closed was the Buffalo track at Paris, when Taylor, Ellegaard and Meyers met to decide superiority. The Dutchman won by one point while the major won second honors by another point. The champion of the world had to be contented with third money. Each of the riders won a heat, and this simply because each happened to gain first place after the bell is proof that the track was responsible for the result. In the first heat Meyers won by a length from Taylor. In the second Meyers had the lead at the bell but Taylor from last position sprinted, took two lengths and won very easily. In the last heat the Dane went ahead at full speed at the bell and won easily by half a wheel from Meyers. The race was given to Meyers who had five points against Taylor's six and Ellegaard's seven. In the 10 kilometers paced event Petit-Breton, the young rider from Argentina, created a sensation by going the distance with ease in 8:25 2-5, only 3-5 seconds slower than Linton's world's record.

Road Races at League Meet

New York, July 7.—The Century Road Club Association, of this city, will run a 25-mile handicap road race on Saturday at Atlantic City, during the L. A. W. meet. The course will be over a 5-mile stretch between Ventnor and Longport in the immediate neighborhood of the city. A Cleveland bicycle will be given for time prize and a bicycle will also be awarded the winner of the race. M. L. Bridgman will referee. Preceding the bicycle race, which will be started at 10:30 a. m., there will be a 25-mile motor cycle race promoted by the New York and Alpha clubs of this city and Brooklyn. The first prize will be a motor bicycle.

Cycling Notes and Comments

The value of bicycles exported during the 11 months which ended with May was slightly in excess of that of the corresponding period last year. The total for the 11 months was $2,390,558.

The James Lucas Co., of Bristol, Conn., an offshot of a famous English house, organized 3 years ago to manufacture bicycle lamps, has been dissolved.

A. A. Hansen, of Minneapolis, who recently attempted to establish a 1,000 mile motor cycle record and was thrown after going 400 miles, will try again about July 15.

The Wheeler Mfg. Co., of Detroit, of which E. S. Anderson, formerly of the Anderson Cycle Co., is manager, expects to manufacture motor bicycle saddles for next season.

At Atlantic City Saturday George Leander of Chicago won the 15-mile motor-paced race against W. F. King of Salt Lake City, in 24:30 2-5 by 8 yards. King led the first 3 miles, then lost his pace. He made several clever spurts, but was unable to pass the Chicago man.

At the Colloseum, Pittsburg, Monday night Howard Freeman broke the world's bicycle record for 20 miles by going the distance in 29:08 4-5, as against Harry Elkes' time of 29:19. The race was motor-paced, between Freeman and Tommy Hall. Hall was given a half-mile handicap. Freeman's time for 5 miles was 7:09 2-5; 10 miles, 14:28 2-5; 15 miles, 21:47 2-5; 20 miles, 29:08 4-5.

In defeating George Leander in two straight 10-mile heats at Atlantic City, N. J., Monday night Champion made new competitive and track bicycle records. The Frenchman won the first heat by three and a half laps in 15:04. The first mile was ridden in 1:27 1-5; the second in 2:52 3-5. From that on it was the Frenchman's race. The 5 miles were ridden in 7:12 2-5, the 10 miles being completed in 14:29 3-5. Champion rode the last mile like a fiend, going the distance in 1:23 2-5, all of which are track competitive records. Leander was nowhere in the last heat, being 7½ miles behind at the finish.

At Plymouth, England, on June 28, Victor Rigal rode a mile on a motor bicycle in 1 hour 37 minutes from a standing start.

BREAK ZE AUTOMOBILE? NEVAIRE!

Saladin Resents Ze Accusacione of Having Smashed Monsieur's Vehicle, Which Cost Ze 30,000 Francs.

The San Francisco Examiner furnishes the following amusing story of an interview with a French chauffeur who was accused of having destroyed an expensive machine owned by Charles A. Baldwin of that city:

"Racontez l'histoire," said M. Albert Saladin to his companion as the late chauffeur to Charles A. Baldwin arrived at the seventh floor of the Examiner building and was confronted by the office boy at the outer door.

The ex-chauffeur was accompanied by his attorney and interpreter, who resembled the famous Alphonse of the Sunday editorials.

"We will write for publicaciones some things," explained the interpreter politely.

"Where's the rest of the crowd?" asked the office boy.

"You mean ze—ze"—

"Yes, Happy Hooligan, Mrs. Katzenjammer, Foxy Grandpa, Noah and the animals."

"We do not know ze gentlemen," responded the interpreter. "We have come to speak in ze paper about Monsieur Baldwin and his late automobile. Monsieur Baldwin makes an accusacione unjust. He says Monsieur Saladin, zis gentleman, whom I have ze honneur to make present, is responsible for ze automobile destruccione. Monsieur Baldwin has been tres unkind."

"Helas! Oui!" the recent chauffeur ejaculated. "We shall say so in ze Examinaire."

"He has made a bad reputatione for Monsieur Saladin," continued the interpreter and attorney. "I shall say what I now think of him."

"I shall write my impressiones of him," declared Saladin.

"Monsieur Baldwin forgets ze grand chivalry," said the other.

"His remarks are like ze electric motor zat goes tres fast."

"He forgets to be so careful zat he can prove what he say."

"He does not remember ze third commandement, 'Tu ne diras point de faux temoignage contre ton prochain.'"

"Helas! Non!"

"Parbleu!" interjected the office boy.

"I did not crush ze automobile," the recent chauffeur explained. "I can run her wizout ze accident to happen. Perhaps Monsieur Baldwin do so himself. I have not been zare since dix—ten days. My ability cannot have questiones. Monsieur Baldwin can speak for himself."

"Oui, mon cher Albert," the attorney said, "and I will now speak for you."

"Ciertamente," the whilom chauffeur responded. "We shall together speak. I have run Monsieur Baldwin's automobile fifty miles in ze hour, with accident nevaire! Monsieur Baldwin try to do zat himself and he have to hire ze surgeone for Madame McCarthy, whose arm he break in ze collision. Ah, mon cher"—

"Now I shall say," the attorney and interpreter interrupted; "I shall say——"

"He pay 30,000 francs for ze automobile in Paris," Saladin proceeded, the loquacity lever having been thrown clear back. "It was a vairy good machine; but all zat has been past. Ou est ze automobile now? And ze 30,000 francs?"

"But wait till Sheriff Langford gets you!" suggested the office boy.

"Ze sheriff? Ha! Ze gendarmes! I am sans peur. Let ze gendarmes come! I shall tell them some things which I think. Everybody can say in Santa Claire zat I was ze good chauffeur, zat——"

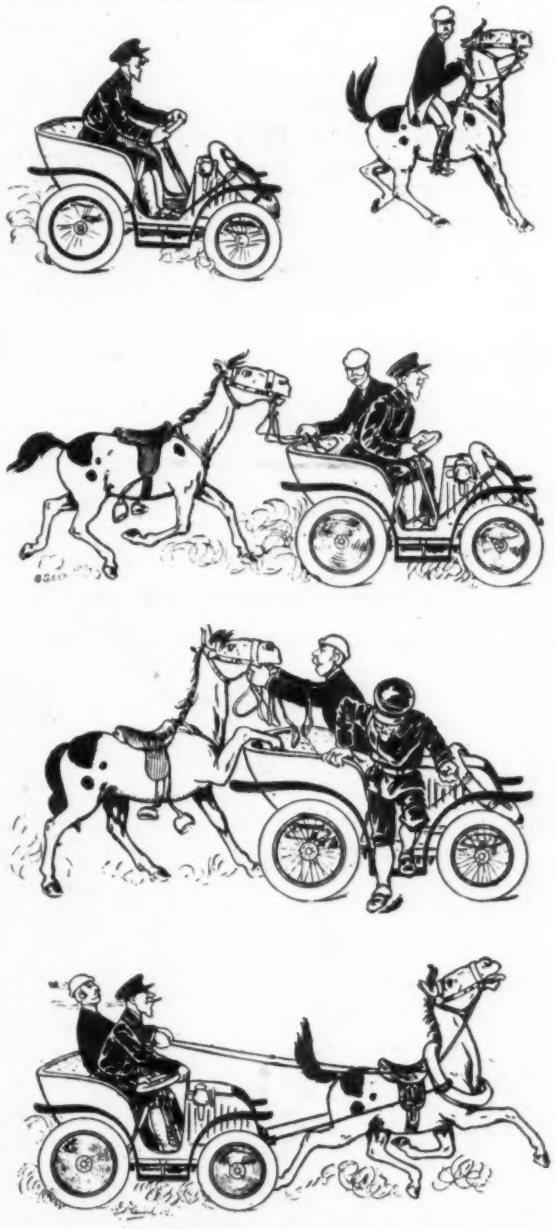
"We will print in ze paper——" began the attorney-interpreter, making another reach for the conversational brakes. But the deposed chauffeur would not be stopped. Said he:

"Monsieur Baldwin runs ze machine so fast as he can, but I can beat ze trains. Zat is my trade, while ze monsieur only eat his money and does not know ze trade. If Monsieur Baldwin did not break ze automobile himself, some hired man did so—sure! I can run ze machine and not have ze smashup. Everybody know in Santa Claire. I will bet Monsieur Baldwin $1,000 against $1 zat I have not caused ze smashup. Perhaps he will want for a good chauffeur now. Maybe he will want for me, but I do not want for him. My attorney and interpretaire will now speak for himself."

"Zare is no more need for ze explanatione," declared the latter.

"C'est vrai," said the chauffeur.

And having thus given to the world the true story of how he had not wrecked the Baldwin automobile, Monsieur Saladin, accompanied by the attorney and interpreter, returned to his maison.



A Story Without Words.

MISCELLANEOUS

Advertisements under this head 5 cents per word first insertion; 3 cents per word each insertion thereafter. Cash with order. Express orders, postoffice orders or stamps received.

FOR SALE—Well equipped bicycle shop and store in Iowa. O. S. W., care MOTOR AGE. 25

WANTED—Bicycle tubing, ¾-in. or ⅞-in., 26 in. long or over. C. A. Coey & Co., 5311 Cottage Grove avenue, Chicago, Ill.—23.

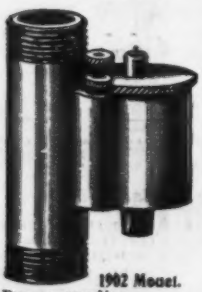
FOR SALE—Cheap—Dynamos and Motors, standard makes, all guaranteed; reliable repair work. Schureman & Hayden, 139 S. Clinton street, Chicago. Telephone 1648 Main. tf

FOR SALE—One 1902 Winton delivered May 1st. Has $80 dos-a-dos seat, three large lamps, in beautiful condition; guaranteed speed, 28 miles an hour. Price $1,100. Owner wants Winton touring car. All statements guaranteed. Also 1 Waverley runabout, perfect condition, $400. Fisher Automobile Company, Indianapolis, Ind. tf

ADVERTISER, having bought large machine, offers for sale French automobile, Henriot, 8 horsepower, aluminum body, detachable tonneau, tires, 90 meters, 3 speeds and reverse. Imported in May. HENRIOT, care of MOTOR AGE, Monon building, Chicago. tf

WE HAVE new motor (recently patented) worthy the attention of leading auto manufacturers; have working model. MOTOR, care MOTOR AGE, Monon building, Chicago. 2

FOR SALE OR TRADE.—Haynes-Apperson 6 h. p. delivery wagon, No. 1 condition. Sell cheap or trade for steam vehicle for private use. A. R. GROVE, Bluffton, Ind. 2



1902 Model.
Patents Pending.

THE KINGSTON NOISELESS AUTOMATIC CARBURETER.

If you have a gasoline engine that troubles you, or a gas engine that you wish to convert into a gasoline engine you need this Carbureter, the only reliable system for automobile or bicycle motors. Will stand any amount of vibration, is noiseless, light; no valves in motion when once adjusted to an engine; never needs to be shut off or changed.

KOKOMO BRASS WORKS,
Kokomo, Indiana.

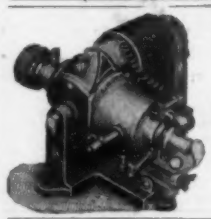
ELECTRIC CHARGING PLANTS
For AUTOMOBILES and LAUNCHES
"SELF STARTING"
Write us for prices etc.
MERIAM-ABBOTT CO.,
CLEVELAND, O.

H. L. HOFFMAN MOTOR CO.
JOLIET, ILL.
Manufacturers of Single 4 H. P., Double 7 H. P., Four Cylinder 16 H P. Gasoline, Automobile or Marine, 4 cycle Motors, Either Horizontal or Vertical. Fully Guaranteed. Prices the lowest.
Your patronage is solicited.

The Locomobile Company of America, ...
1354 Michigan Avenue,
CHICAGO, ILL.

DE DION-BOUTON MOTORS AND AUTOMOBILES
ARE THE STANDARD OF THE WORLD.
35,000 IN USE.

K. A. SKINNER, 41 Stanhope St., Boston, Mass.
SOLE UNITED STATES AGENT.



To Owners of Gasoline Engines, Automobiles, Launches, Etc.
The **Auto-Sparker**
does away entirely with all starting and running batteries, their annoyance and expense. No belt—no switch—no batteries. Can be attached to any engine now using batteries. Fully guaranteed; write for descriptive catalog.
MOTSINGER DEVICE MFG. CO.
41 Main Street, Pendleton, Ind.

DIXON'S No. 635 GRAPHITE
is the best form of Graphite for lubricating engine slides and cross-heads of steam motors, and for lubricating cylinders of both steam and gasoline motors . . . . . :
Joseph Dixon Cruciable Co., *JERSEY CITY, N. J.*

DYKE'S 6 H. P. GASOLINE ENGINE
was first put on the market 3 years ago for automobile work. We have been improving it constantly ever since. "Practice makes perfect." Dyke's engine has a cylinder and head all in one casting This engine is larger and better made than the cheap material being offered at a low price. Why not pay a little more and get something first class and plenty of power. **DYKE'S FLEXIBLE REACHLESS RUNNING GEAR** is the only original gear. Get our new catalog No. 7. Over 500 illustrations.
DYKE FLOAT FEED CARBURETER, $15—Only Carbureter with Throttling Lever and really capable of giving the Engine various speeds. ::
A. L. DYKE, 1402 Pine Street, ST. LOUIS, MO.